White Mountain National Forest

United States
Department of
Agriculture

Forest
Service

**Eastern
Region**

Information for Notice and 30 Day Comment on Proposed Activities for the

Warren to Woodstock Snowmobile Trail Project

This document is available in large print

Contact the White Mountain National Forest Supervisor's Office at 1-603-528-8721 or TTY 1-603-528-8722.

United States Department of Agriculture **Forest Service** **White Mountain National Forest**

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File Code: 2350/1950
Date: November 23, 2004

Dear Planning Participant,

The Ammonoosuc/Pemigewasset Ranger District of the White Mountain National Forest is in the process of finalizing the Environmental Assessment (EA) for the Warren to Woodstock Snowmobile Trail Project. Enclosed for your comment is the Information for Notice and 30-Day Comment on Proposed Activities for this project. The project proposes the construction of a snowmobile trail between the towns of Warren and Woodstock, New Hampshire. The trail would include sections of new trail construction as well as sections constructed on or adjacent to portions of the long-abandoned Warren to Woodstock Carriage Road as well as along existing roads and old skid trails. Alternative 2 is the Preferred Alternative for this Project. The Environmental Assessment examines the alternatives considered for this project, provides the mitigation measures to limit potential effects, and summarizes the analysis of potential environmental effects associated with each alternative considered in detail.

I am requesting your comments because we are at a point where your input will be the most useful and meaningful for my consideration in the final decision. To attain standing to appeal any decision I make on this project proposal, you must submit comments regarding the enclosed document during this period. There will be no other comment period for this project proposal. Your comments must be timely and substantive to assure that I have the opportunity to consider them before we complete the analysis and I make a decision on this project and the associated site-specific, non-significant Forest Plan amendment. Instructions for submitting your comments are included in this document (How to Comment on the Warren to Woodstock Snowmobile Trail Project 30-Day Comment Information). Please review these instructions carefully.

Please be aware that your name, address and comments will become part of the public record and may be available for public review. Thank you for taking the time to participate in this process. Your comments and involvement are important to me. If you have any questions please contact Susan Mathison at 603-536-1315. This information document will be available on the White Mountain National Forest web site (www.fs.fed.us/r9/white).

Sincerely,

THOMAS G. WAGNER
Forest Supervisor

Enclosure

Contents

What is the Forest Service Proposing?

The Ammonoosuc/Pemigewasset Ranger District is proposing to construct a snowmobile trail that would connect the existing Three Ponds and the Glover Brook Snowmobile Trails (Map 1) . This trail was described as the Proposed Action in the Warren to Woodstock Snowmobile Trail Scoping Report, January 23, 2004.

Table 1 displays the actions proposed by the Forest Service that meet the needs for change identified for the Warren to Woodstock Snowmobile Trail Project Area. See the Endnotes section for a list of applicable mitigation measures related to this Proposed Action.

Where is the Warren to Woodstock Snowmobile Trail Project?

The Warren to Woodstock Snowmobile Trail Project Area is located in the Towns of Warren and Woodstock, New Hampshire, Grafton County on the Ammonoosuc/ Pemigewasset Ranger District of the White Mountain National Forest.

Background

Why is the Forest Service evaluating the Warren to Woodstock Snowmobile Trail Project now?

Members of the public have requested the Forest Service to construct a snowmobile trail between the towns of Warren and Woodstock for more than ten years. The Forest Service continues to receive inquiries; project proponents indicate interest in this linking trail because of complications for snowmobile travel, including weather-related closures on the Interstate 93 railbed snowmobile trail corridor. These complications and periodic weather-related closures have precipitated a need for a supplementary route to the railbed corridor trail. Project proponents also note that increasing passenger train use in the late fall and early winter seasons may curtail snowmobile use of the railbed corridor. There is public interest in and requests for additional snowmobile trail opportunities, specifically a link between the existing Three Ponds and the Glover Brook Snowmobile Trails. Some members of the Warren community have requested the trail in order to attract snowmobile-related revenues to local lodging and retail businesses.

The proposed Warren to Woodstock Snowmobile Trail would be a link snowmobile corridors Corridor 5 and Corridor 11. The New Hampshire Snowmobile Association indicates a continuing demand for this trail link. The State of New Hampshire Bureau of Trails has expressed support for this project; the Bureau has stated that it will consider this trail a high priority for State construction and maintenance grant funds.

User groups, including state and local snowmobile groups, continue to request development of this trail. Before a decision can be reached regarding this proposed project, pertinent effects will be analyzed and documented in the Warren to

Woodstock Snowmobile Trail Project Environmental Assessment (EA) and presented to the deciding officer, Forest Supervisor Tom Wagner.

If a decision is made to proceed with construction of the trail, project implementation could begin in early 2005. It is anticipated that Trail construction would be completed no later than October 2006.

How does the Project Area relate to the Forest Plan?

For project level planning, such as the planning for this Proposed Project, the Project Area is seen through the lenses of Management Areas (MAs) and Habitat Management Units (HMUs) (Maps 2 and 3). These designations assist resource managers and the decision maker to evaluate a proposal and its anticipated effects to assure that the project level planning is in concert with the Forest Plan. (For a discussion of general management direction and scales used in project planning, including Management Areas and Habitat Management Units, see Summary of Terms in the Endnote section of this document.)

The Warren to Woodstock Snowmobile Trail Project Area contains lands in MAs 2.1, 3.1, and 6.2 lands (Map 2) within Compartment 36 and HMUs 403, 404, and 412 (Map 3). The MA 2.1 and 3.1 lands within the Project Area have been managed with both even- and uneven-aged silvicultural systems.

The linear Project Area includes the proposed snowmobile trail corridor and the immediate surrounding area. The proposed trail includes approximately 9 acres; the Project Area, which includes the lands immediately adjacent to the proposed trail and surrounding areas considered for alternate trail locations, includes 4,839 acres. The Project Area represents less than 6/10 of 1% of the White Mountain National Forest.

What past, present, and future activities are relevant to the Warren to Woodstock Snowmobile Trail Project?

Heritage Resource Conditions

The dominant historic use of the Project Area was the construction, use, and subsequent abandonment of the Warren to Woodstock Carriage Road (Carriage Road). The Carriage Road was constructed in the 1840s to provide a travelway between the communities of Warren and Woodstock, New Hampshire. Upon the construction of New Hampshire State Route 118 in the 1930s, the Carriage Road fell into disrepair and was eventually abandoned. Portions of the original Road have been incorporated into Forest Service roads. Elsewhere, the Road is fully reforested and most portions remain difficult to discern. (More detailed descriptions of the history and current condition of this abandoned road will be included in the Heritage Resources section, below.)

Recreation

The dominant feature in the Project Area is State Route 118 which roughly parallels the route of the historic Carriage Road. Route 118 is a paved, all-season, two lane state highway. The Project Area includes existing snowmobile trails; Glover Brook/Elbow Pond to the north, and Three Ponds to the south. There is summer camping and boating at Elbow Pond.

Vegetation Management, Past and Future Activities

The Project Area has been managed for a variety of uses and products; recent activities and those proposed for implementation within the foreseeable future are described below.

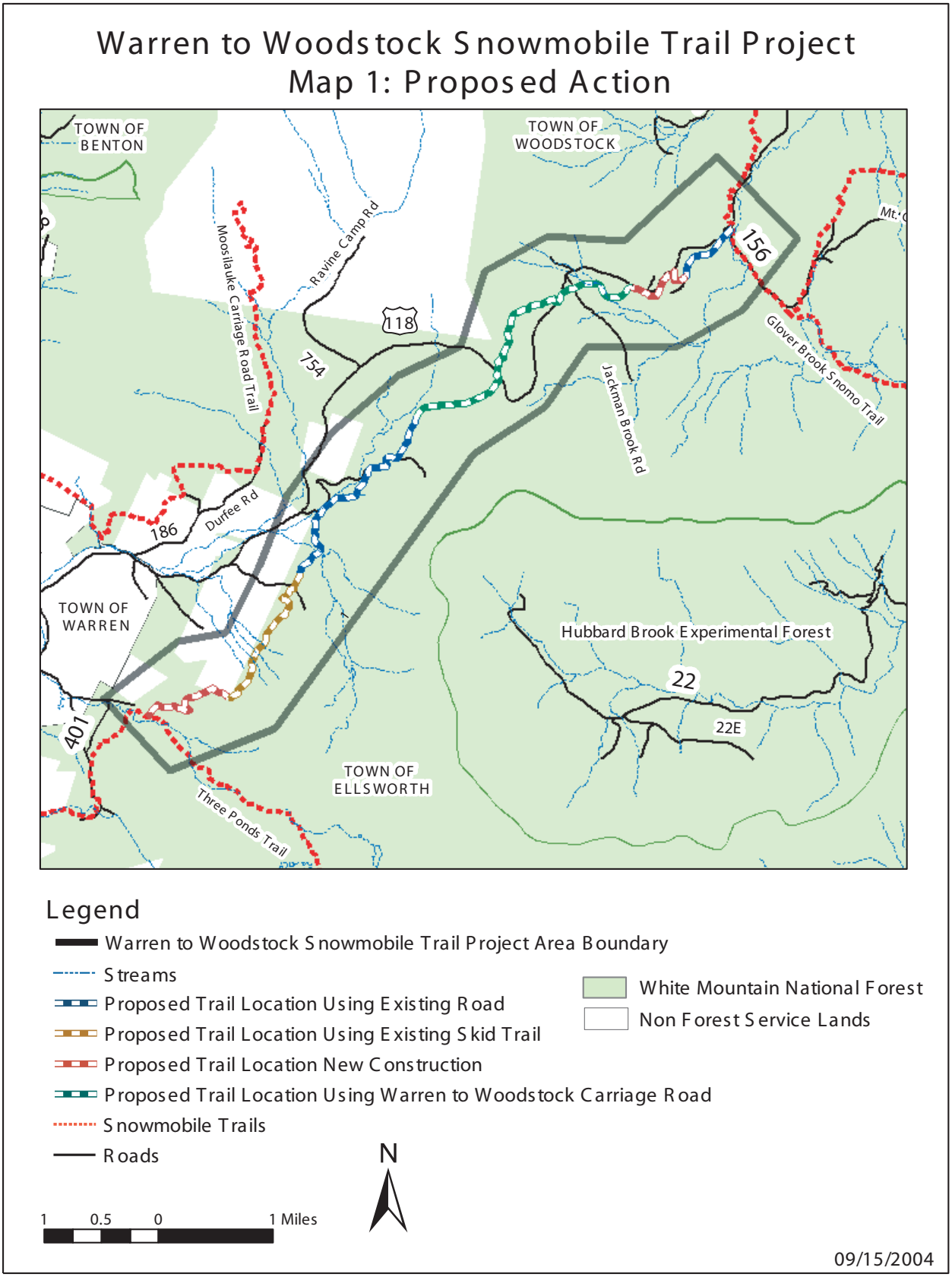
Compartment 8. Breezy Point Sale, 1996 – 1998. Timber Sale activity did not occur within the Project Area. There are a few stands within the Project Area that will be considered for timber harvesting but this activity would not affect the proposed trail location or its action alternative.

Compartment 9. Overlook Sale, 1998 – 2000. The proposed trail location lies in part on the Mount Cushman Road (FR 211). The road was last used for timber hauling in 2000. The next anticipated use is 2013 and would include winter use. The remainder of the trail location in Compartment 9 would also be used as a temporary road or skid trail.

Compartment 10. Blodgett Brook Sale, 1995 – 2000. Blodgett Brook Road (FR 210) is part of the proposed trail location. The road was last used for timber hauling in 2000. The next anticipated timber harvest and hauling of the road would be in 2013. Stands along the remainder of the trail, in Compartment 10, would be managed at the same time. About half the stands would be skidded northeast to the Blodgett Brook Road and the other half, west to the Warren CCC Road (FR 404).

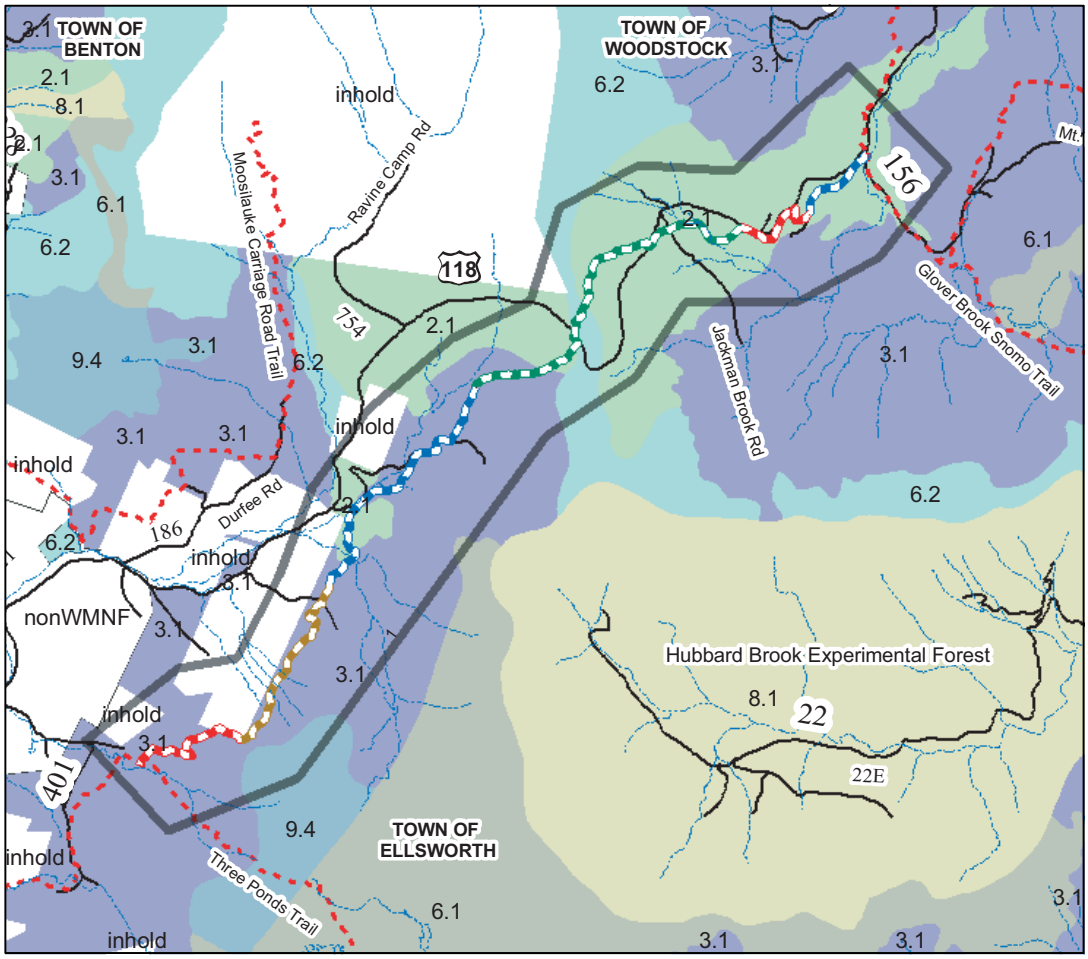
Compartment 11. Batchelder Brook Sale, 1993 – 1997. Batchelder Brook Road (FR 401) is part of the proposed trail location. The road was last used for timber hauling in 1997. The next anticipated timber harvest and hauling is the Batchelder Brook Timber Sale in 2006 with associated sale activity through 2010. Also there are potential harvest areas, skid trails and landings along the remainder of the proposed trail location elsewhere in Compartment 11. These skid trails will be needed in the winter season. There are opportunities to separate skid trails and landings from the trail including widening Batchelder Brook Road to accommodate both uses.

Compartment 43. Jackman Brook Sale, 1986 – 1990. Elbow Pond Road, Spur G (FR 156G) is part of the proposed trail. Further west, the trail crosses the Jackman Brook Road (FR 163). The next anticipated timber hauling on this road would be 2007. Also there may be some harvesting along the remainder of the



Map 1: Project Area and Proposed Action

Warren to Woodstock Snowmobile Trail Project
Map 2: Management Areas



Legend

- Warren to Woodstock Snowmobile Trail Project Area Boundary
- Streams
- Proposed Trail Location Using Existing Road
- Proposed Trail Location Using Existing Skid Trail
- Proposed Trail Location New Construction
- Proposed Trail Location Using Warren to Woodstock Carriage Road
- Snowmobile Trails
- Roads

1 0.5 0 1 Miles

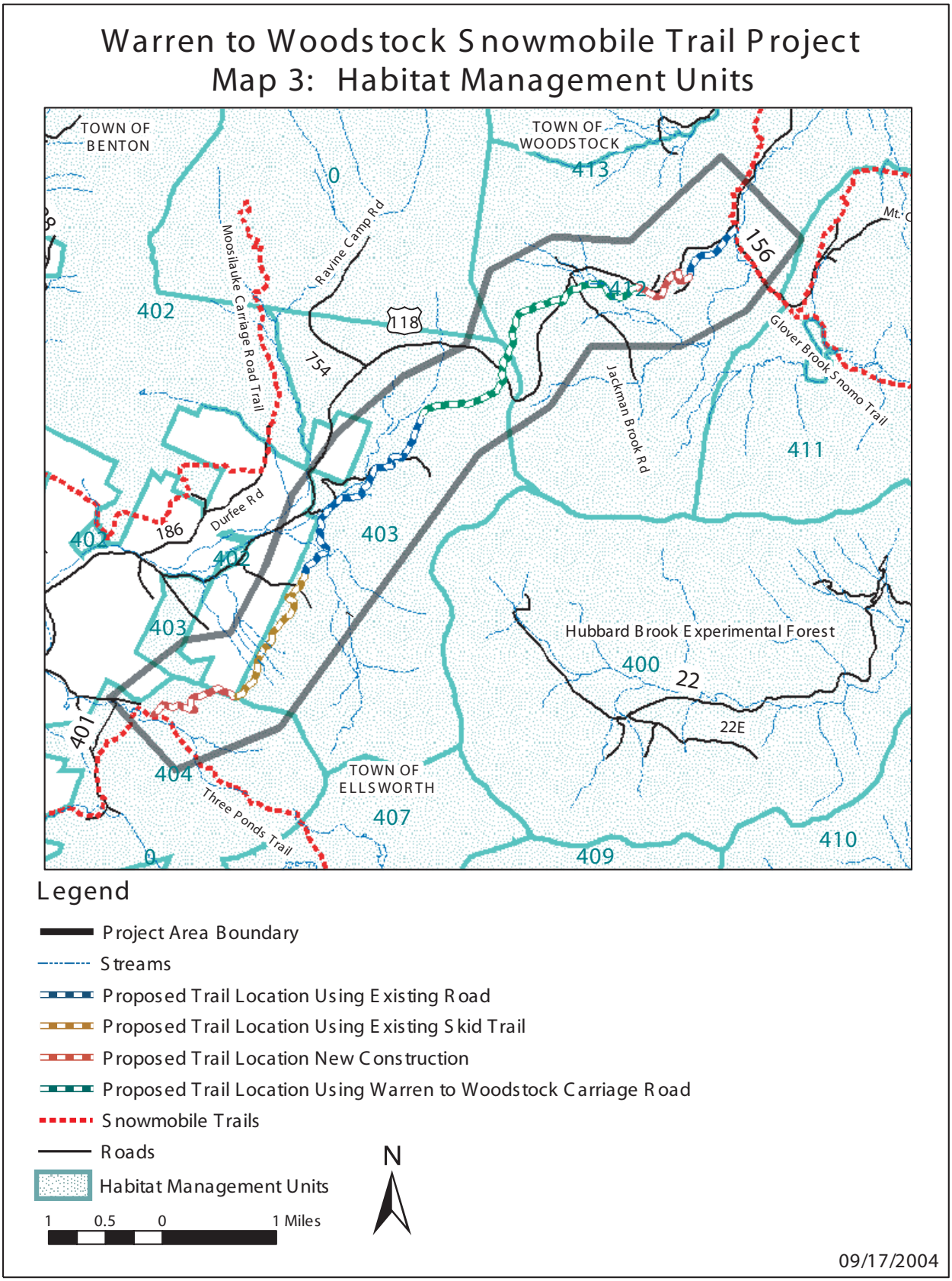
N

Management Area

- non WMNF
- 2.1
- 3.1
- 6.1
- 6.2
- 6.3
- 8.1
- 9.4

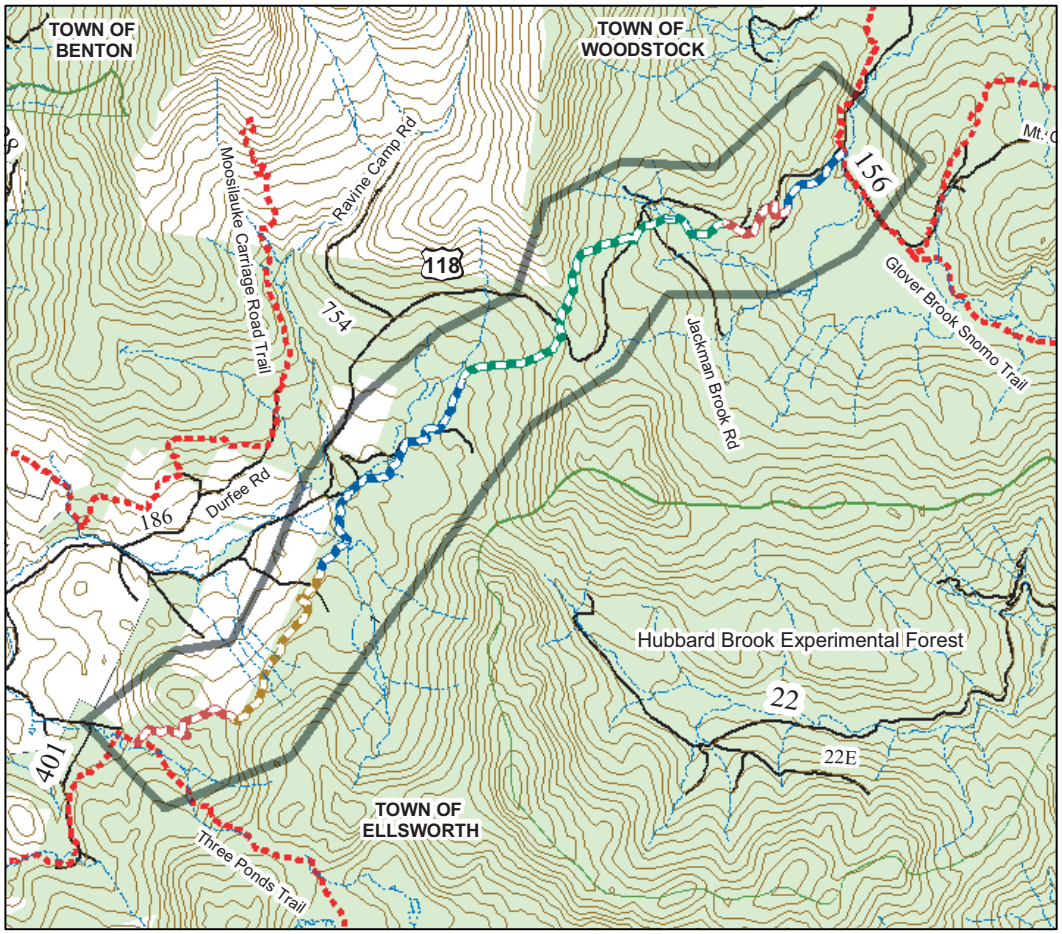
09/15/2004

Map 2: Management Areas



Map 3: Habitat Management Units

Warren to Woodstock Snowmobile Trail Project
Map 4: 100 Foot Topographic Contours



Legend

- Project Area Boundary
- Streams
- Proposed Trail Location Using Existing Road
- Proposed Trail Location Using Existing Skid Trail
- Proposed Trail Location New Construction
- Proposed Trail Location Using Warren to Woodstock Carriage Road
- Snowmobile Trails
- wmctours_100_83put
- Roads
- White Mountain National Forest
- Non Forest Service Lands

1 0.5 0 1 Miles

N

09/15/2004

Map 4: Project Area with 100 Foot Topographic Contour Lines

trail location. Skidding would be in the direction of the Jackman Brook Road and should not conflict with the trail.

Compartment 49. Walkmannomee Sale, 1998 – 2000. The next commercial timber harvest in this area is anticipated in 2007. There would be only minor sale activity, if any, near the proposed trail location.

Purpose & Need

Why is the Forest Service proposing activities in the Warren to Woodstock Snowmobile Trail Project Area?

The **Purpose** of the Warren to Woodstock Snowmobile Trail Project is to implement White Mountain National Forest Plan direction in the Project Area. This can be accomplished by addressing site-specific needs and opportunities to move the Project Area from its existing condition to its desired condition as described in the Forest Plan.

The Forest Plan designates land under a range of Management Areas, (MAs), and describes appropriate management for each MA. The proposed trail traverses three MAs: 2.1, 3.1 and 6.2. (See Map 2.)

An interdisciplinary team has analyzed this Project Area to identify site-specific **needs** for management activities that would change or enhance the current conditions of the Project Area and move it toward the desired condition for each of the MAs as described in the Forest Plan, as amended (pp. III-30 through III-41).

Management Area 2.1

The Forest Plan specifies that the purpose of recreational activities in areas designated as MA 2.1 will "broaden the range of recreation options, mainly those offering roaded natural opportunities," (White Mountain National Forest Land and Resource Management Plan, III-32). The Desired Condition for the portion of the Project Area designated as MA 2.1 includes "noticeable human activity in these areas resulting from many uses. Evidence will usually be in harmony with the natural-appearing environment and consistent with good resource management. Roads will provide access to meet land management objectives. Selected areas will be accessible for off-road motorized forms of recreation activities," (White Mountain National Forest Land and Resource Management Plan, III-31).

Management Area 3.1

The Forest Plan specifies that the purpose of recreational activities in areas designated as MA 3.1 will "broaden the range of recreation options, mainly those offering semiprimitive motorized experience opportunities," (White Mountain National Forest Land and Resource Management Plan, III-36). The Desired Condition for the portion of the Project Area designated as MA 3.1 states that the area "be accessible for off-road management activities," (White Mountain National Forest Land and Resource Management Plan, III-31).

Management Area 6.2

The proposed trail location traverses an approximately 850-foot wide section of MA 6.2 lands. The purpose of this MA, as described in the Forest Plan, is to "broaden the range of recreation options, mainly those forms of semiprimitive nonmotorized recreation opportunities." The Desired Condition for the portion of the Project Area designated as MA 6.2 specifies that "Evidence of human activities will generally be unnoticeable except for trails that traverse the area and occasional recreational facilities. Recreation activities will be limited to nonmotorized dispersed use. There will be no roads." (White Mountain National Forest Land and Resource Management Plan, III-51.)

The Proposed Action, as described in the Scoping Report, states that the section of the proposed trail within the MA 6.2 lands would be located on a remnant section of the long-abandoned Warren to Woodstock Carriage Road. The MA 6.2 lands extend in a north/south corridor, crossing the Carriage Road between Warren and Woodstock. In order to provide a snowmobile trail connection between the existing Three Ponds Trail and the Glover Brook Trail, and thereby meeting the Desired Condition of the MAs 2.1 and 3.1 throughout the area, the Warren to Woodstock Snowmobile Trail must cross the MA 6.2 lands. The proposed trail section crossing the MA 6.2 land, would be a non-conforming use within this approximate 850-foot long and 20-foot wide corridor totaling approximately 0.4 acres. The crossing would require a site-specific Forest Plan amendment for this 0.4 acre non-conforming use.

The proposed trail location within the MA 6.2 is coincident with the location of the Carriage Road, crosses the narrowest portion of the MA 6.2 lands for approximately 850 feet, and minimizes the amount of clearing and excavation required for trail construction.

The section of MA 6.2 through which the proposed trail would pass is also currently bisected by State Route 118, another non-conforming use of this management area. When designating management areas in the 1986 Forest Plan, site-specific accommodations were not made for obvious non-conforming uses including long and well-established travelways. State Route 118 is a permanent land feature that is a non-conforming use of MA 6.2; the Forest Plan passively accommodates this use.

Of the 0.4 acre/850-foot section of MA 6.2, approximately 500 feet traverses a narrow extension of the Jobildunk Roadless Area Review and Evaluation (RARE II) area. This area had been considered in the 1986 Forest Plan for designation as Wilderness. While other areas of the Forest were recommended and ultimately designated as Wilderness, this area was not recommended nor designated, and the area was subsequently assigned to Management Area 6.2.

The area currently falls under the 2000 Roadless Area Conservation Rule that was published in the Federal Register on January 12, 2001. The Rule established general limits, with some exceptions, on timber harvest, road construction and reconstruction within inventoried roadless areas on national forests and grasslands across the country.

The 2000 Rule has not been formally implemented because of court injunctions. The Forest Service is following interim direction to manage these areas. Because trails are not restricted by the 2000 Rule, the proposed trail would be compatible with the rule if it was not injoined. The proposed snowmobile trail is a compatible use under this rule.

What is the site-specific need identified for the Warren to Woodstock Snowmobile Trail Project Area?

The following **need** has been identified for the Warren to Woodstock Snowmobile Trail Project Area.

Broaden the range of recreation options in MAs 2.1 and 3.1

The Desired Condition for MAs 2.1 and 3.1 specifies that activities in these areas will "broaden the range of recreation options" through roaded natural and semiprimitive motorized opportunities, respectively.

Winter snowmobile use occurs on the snow-covered railbed of the railway corridor that parallels Interstate 93. The railbed corridor, serving as Corridor 11, is problematic because, frequently, there is insufficient snow depth to effectively cover the railbed ties and rails. In marginal snow years, the railbed trail is frequently closed because of insufficient snow depths. Because similar snowfall in a forested setting would provide adequate coverage for snowmobile travel, the Proposed Action would alleviate this restriction to snowmobile travel.

Rail use for tourism and commerce is a continuing emphasis for New Hampshire state and local rural economic development efforts. As rail use for tourism continues to increase, it is possible that snowmobile use of the railbed could be discontinued, effectively severing a major snowmobile corridor connection between the north and south portions of the state. The Memorandum of Understanding (MOU) between the State of New Hampshire, Department of Resources and Economic Development, Bureau of Off Highway Recreation Vehicles (BOHRV) and the US Forest Service, White Mountain National Forest specifies "The major objective on Corridor trails is to maintain uninterrupted use." The Warren to Woodstock Snowmobile Trail would provide the supplementary snowmobile route, as supported in the MOU, for railbed trail closures due to snow conditions and/or other mutually exclusive uses, including rail travel.

Local proponents also advocate for the highly localized economic effects of the proposed trail, stating that the community of Warren would benefit from the increase in snowmobile traffic accessing their small community stores and services.

Based on Forest Plan Desired Condition for MAs 2.1 and 3.1, there is a need to provide a snowmobile trail in the Project Area in order to broaden the range of recreation activities. The Warren to Woodstock Snowmobile Trail Project also responds to public requests for a direct connection between the Glover Brook and Three Ponds Snowmobile Trails.

The Proposed Action would establish a viable alternate route to the I-93 railbed corridor. The need for the alternate route is substantiated by: 1) the above - mentioned Memorandum of Understanding; 2) periodic poor snow conditions which preclude railbed snowmobile travel; 3) changing levels and seasons of rail tourism and/or commerce, and 4) local residents premise that the snowmobile trail, as proposed, would provide positive economic benefits to the town of Warren, New Hampshire.

What decisions will be made for the Project Area?

The Warren to Woodstock Snowmobile Trail Project Environmental Assessment (EA) will evaluate site-specific issues, consider alternatives, and analyze the effects of the activities described in the Proposed Action and in alternatives to that proposal. Based on the needs identified for the Warren to Woodstock Snowmobile Trail Project, the scope of the project is limited to decisions concerning the development of a snowmobile trail within this Project Area.

The EA will provide the deciding official, Thomas G. Wagner, Forest Supervisor, with the information necessary to make the following decisions with regard to the Warren to Woodstock Snowmobile Trail Project.

1. Whether the Warren to Woodstock Snowmobile Trail Project will proceed as proposed, as modified by an alternative, or not at all;
2. What specific resource protection or mitigation measures should be implemented as part of the Project;
3. Would the proposed project have significant impacts that would trigger the need to prepare an Environmental Impact Statement; and
4. Should the Forest approve and implement a site-specific Plan amendment for an 850-foot long and 20-foot wide (0.4 acre) section of the trail corridor that would traverse MA 6.2 lands, where motorized use is otherwise prohibited.

Following the release of this 30 Day Information Document, public responses will be incorporated, and the EA will be completed and presented to the Forest Supervisor for his decision.

Public involvement

How is the public involved in this decision?

The project was presented to the public in the late 1990's; work on the analysis of the project was discontinued soon thereafter due to staffing shortages. Based on continuing public requests, the project was revitalized in 2003. The project was described in the White Mountain National Forest Schedule of Proposed Actions (SOPA) beginning in December 2003.

The Warren to Woodstock Snowmobile Trail Project Scoping Report was mailed to approximately 275 individuals, agencies, and groups on January 23, 2004.

Approximately fifty individuals, agencies, and groups commented on the proposed action during the formal Scoping process. Comments were used to identify issues, to develop alternatives, and to analyze effects of the trail project

At this time the Forest Service is seeking substantive, site-specific comments on:

- How well the alternatives/proposed activities respond to the Purpose and Need identified for the Warren to Woodstock Snowmobile Trail Project;
- How well the alternatives/proposed activities respond to the issues identified for the Warren to Woodstock Snowmobile Trail Project; and
- The anticipated effects of the activities associated with the alternatives/ proposed activities proposed for the Warren to Woodstock Snowmobile Trail Project.

To be substantive, comments should be specific to the activities proposed for the Warren to Woodstock Snowmobile Trail Project and within the scope of the project, that is, the need to move the Project Area towards the Forest Plan goals of providing a broad range of recreational opportunities in MAs 2.1 and 3.1.

Substantive comments will be used to refine the analysis in the Warren to Woodstock Snowmobile Trail EA and will provide the commentor with the right to appeal the Warren to Woodstock Snowmobile Trail Project decision in the future (36CFR215, published in Federal Register Vol. 68, No. 107, pages 33581-33602).

Issues

What issues were identified during Scoping for the Warren to Woodstock Snowmobile Trail Project?

Issues, significant and non-significant, are defined in the Summary of Terms, in the Endnotes section of this document.

Many comments received during Scoping included issues and concerns that will be addressed in the analysis and documentation of the analysis of the direct, indirect, and cumulative effects of the Proposed Action and its alternatives. A full report of comments received during Scoping is available in the Project File. A summary of Scoping comments can be found at the end of each resource section and in the Endnotes section of this document.

Unresolved issues are defined as those directly or indirectly caused by implementing the proposed action.

As a result of scoping, the Forest Service determined that the public raised the following three issues during Scoping:

Issue 1. Safety concerns related to additional snowmobile crossings of State Route 118 (Public Comment)

The proposed location of the Warren to Woodstock Snowmobile Trail requires snowmobiles to cross State Route 118 at two locations, which may pose potential

safety concerns for both snowmobile operators and motorists.

The measure used to evaluate how the alternatives address the issue is:

a. The number and location of trail crossings of State Route 118.

Issue 2. Interpretation and Enhancement of the Carriage Road (Agency and Public Comment)

The Carriage Road may offer opportunities for interpretation in its current condition. While natural revegetation of the original Carriage Road may eventually render the Road's original locations obscure, this revegetation and growth could continue and the Road could be interpreted in its reforested condition.

Alternately, the Proposed Action may offer opportunities to interpret the Carriage Road in an enhanced condition that replicates its condition at the time of original construction.

The measures used to evaluate how the alternatives address this issue are:

a. The number and location of interpretive signs providing history and interpretation of the Carriage Road, and

b. The distance, in miles, of the Carriage Road along which the original tread is enhanced and vegetation is removed.

c. The distance, in miles, of the Carriage Road along which the original tread is allowed to revegetate.

Issue 3. Sound levels along the trail and in the vicinity of Dartmouth's Ravine Lodge may be disruptive (Public Comment)

The construction of the Snowmobile Trail may create an increase in sound disturbances in the vicinity of the trail and Dartmouth College's property, particularly near Ravine Lodge. This change in sound levels may create disturbance to visitors and to wildlife. A trail location south and east of Route 118 may avoid sound disturbance in the area near Dartmouth's property. (See Map 1)

The measure used to evaluate how the alternatives address this issue is:

a. Anticipated change in sound levels, in decibels, due to snowmobile use along the proposed trail and a range of distances from the trail.

Alternatives

What alternatives are being considered for the Warren to Woodstock Snowmobile Trail Project?

The ID team considered five alternatives for the Warren to Woodstock Snowmobile Trail Project, including the Proposed Action and No Action alternatives.

Alternative 1: No Action

Alternative 2: Proposed Action

Alternative 3: Modified Proposed Action

Alternative 4: Trail south and east of Route 118

Alternative 5: Trail along shoulder of Route 118

Why were some alternatives eliminated from detailed consideration?

The following sections describes why Alternatives 4 and 5 were eliminated from detailed consideration.

Alternative 4: Trail south and east of Route 118

Alternative 5: Trail along shoulder of Route 118

Alternative 4 - Construct the Trail south and east of NH State Route 118 (Agency and Public Comment)

The Warren to Woodstock Snowmobile Trail Project Interdisciplinary Team examined a trail location entirely south and east of State Route 118. This alternative addressed the issue regarding safety concerns for snowmobilers and motorists by eliminating any new snowmobile crossing of State Route 118 (Issue 1). Additionally, this trail location would be farther from private land within the WMNF boundary.

The Project Interdisciplinary Team examined this location extensively, however, steep slopes, adverse soil conditions, and the number of streams and wet areas precluded further development of this trail location.

Alternative 5 - Construct the Trail along the shoulder of NH Route 118 to avoid road crossings (Public Comment)

Public comment requested that an alternative be considered that would construct the snowmobile trail along the shoulder of State Route 118. This alternative would address the issue regarding safety concerns for snowmobilers and motorists by eliminating any new snowmobile crossing of State Route 118 (Issue1). This alternative was intended to minimize safety concerns for motorists and snowmobile operators.

A snowmobile trail along the shoulder of NH State Route 118 would pose significant safety hazards to snowmobile operators and motorists. Snowmobiles are equipped with headlights and operators often travel at night. Along this heavily traveled and serpentine route, motorists would encounter on-coming snowmobile headlights on the right-hand side of their automobiles, causing disorientation, particularly during hazardous winter driving conditions. Highway snow removal would also pose concerns for a shoulder-based snowmobile route; snow berms and banks and plow wakes would pose hazards to snowmobile operators along the highway shoulder. Furthermore, because of steep side slopes, construction of a shoulder trail would require extensive fill along the south side of Route 118. Roadway surface width would be increased dramatically, causing significant environmental concerns due to expansive fills slopes, additional culverts, and prohibitive construction and maintenance costs.

Upon consultation with the NH Bureau of Trails as well as the NH Department of Transportation, it was determined that mitigation measures could not adequately address or resolve these safety concerns. This alternative was eliminated from detailed consideration.

Which alternatives are being considered in detail?

The following three alternatives are being considered in detail for the Warren to Woodstock Snowmobile Trail Project Area.

If an action alternative is implemented, the actual level of activities accomplished on the ground, as measured in acres or miles, may differ slightly from current estimates. All variances would be evaluated to ensure that any effects are within the parameters of the effects analyzed and would be documented in the project file.

Construction techniques, based on Forest Plan Standards and Guidelines, would be take into account resource conditions including topography, soil type, stream habitat and water quality, and heritage resource concerns within the Project Area in order to protect natural resources.

See Table 1, for a summary comparison of the activities proposed for all alternatives. See Endnotes for a list of applicable construction and design features, mitigation measures and types.

Alternative 1 – No Action

Under Alternative 1, current and on-going management activities within the Project Area would continue, but no new snowmobile trail construction or heritage resource interpretation would occur. Other activities in the Project Area might occur through current management direction such as road maintenance, natural processes, or other management decisions, including road construction and/or vegetation management.

This alternative provides a foundation for describing and comparing the magnitude of environmental effects associated with the action alternatives.

Alternative 1, No Action, responds to Issue 3, regarding the change in sound levels in the vicinity of the Snowmobile Trail and Dartmouth property. Alternative 1 would not affect other sources of sound within the Project Area; existing traffic along Route 118 would continue year-round, motor vehicle traffic elsewhere within the Project Area would continue, and snowmobile use on the Glover Brook and Three Ponds Snowmobile Trails would continue.

The Interdisciplinary Team discussed other proposals to reduce the potential change in sound level that was noted as a concern by both the agency and the public. The Team determined that regulating the types of snowmobiles that would be permitted on the trail (4-stroke engines are generally quieter than the more common 2-stroke engines) or regulating the number of snowmobilers using the trail on a daily basis were impractical for the Forest Service or State Bureau of Trails to enforce. Because daily regulation and compliance could not practically be insured, these

proposals to reduce potential changes in sound were eliminated from further analysis.

Alternative 2 – Proposed Action

Alternative 2 is the Proposed Action that was described in the Scoping Report that was mailed in January, 2004. This alternative considers a snowmobile trail constructed between Warren and Woodstock, NH that would approximately follow the route of the long-abandoned Carriage Road. The Proposed Action would construct the snowmobile trail on: 1) existing Forest Service roads or skid trails that have been constructed on parts of the abandoned Carriage Road, 2) parts of the Carriage Road that have been abandoned and are in various stages of revegetation and 3) areas of new construction in the vicinity of the Carriage Road where it is either no longer identifiable or where resource concerns along the original location preclude trail construction.

The Proposed Action includes the construction or enhancement of a series of trail segments as follows:

- 2.8 miles of enhancement of existing, improved Forest Service roads, approximately half of which lie in the same location as sections of the long-abandoned Warren to Woodstock Carriage Road;
- 1.5 miles of enhancement, including brushing and drainage improvement, of previously cleared skid trail that had originally been part of the Carriage Road, enhancing and replicating the condition of the Carriage Road at the time of its original construction;
- 2.8 cumulative miles of enhancement of abandoned sections of the Carriage Road; and
- 1.7 miles of new trail construction not located on or immediately adjacent to the abandoned Carriage Road.

In MAs 2.1 and 3.1, Alternative 2 proposes design and construction that conforms to Forest Plan Standards and Guidelines for these Management Areas. As noted above, however, in order to provide the trail connection identified in the Purpose and Need for Action, approximately 850 feet of the trail must traverse the corridor of MA 6.2 lands which would not otherwise include motorized recreation opportunities.

In Alternative 2, the segment of trail which traverses MA 6.2 lands is located on a remnant of the abandoned Carriage Road. The establishment of a snowmobile trail in this MA would require a site-specific non-significant amendment to the Forest Plan Standards and Guidelines for MA 6.2. Standards and Guidelines appropriate for MA 6.3 would be utilized in this area which measures approximately 850 feet long and 20 feet wide, or approximately 0.4 acres. This width would include 10 feet of original Carriage Road tread surface and five foot clearing limits as was originally cleared on each side of the Road.

Alternative 2 would include interpretive signing of the abandoned Carriage Road

at each terminus of the Warren to Woodstock Snowmobile Trail and where the Snowmobile Trail crosses State Route 118.

Alternative 3 – Modified Proposed Action

Alternative 3 considers a snowmobile trail that would be constructed between Warren and Woodstock, NH and follows a route parallel to the abandoned sections of Carriage Road with the exception of areas where steep terrain, soil conditions, or other resource concerns require deviation from this route. In all sections where the original Carriage Road is discernible, the snowmobile trail would be constructed approximately 25 feet south of and parallel to the original Carriage Road. In some sections the original Carriage Road has been previously upgraded to a Forest Service skid trail or road; in these sections, the existing skid trail or road would serve as the snowmobile trail.

Alternative 3 responds to Issue 2 by retaining the remnant portions of the Carriage Road in their current, revegetated condition and includes the construction or enhancement of a series of trail segments as follows:

- 2.8 miles of enhancement of existing, improved Forest Service roads, approximately half of which lie in the same location as sections of the previously-abandoned Warren to Woodstock Carriage Road,
- 1.5 miles of enhancement, including brushing and drainage improvement, of previously cleared skid trail that had originally been part of the Carriage Road,
- *2.8 cumulative miles of new trail constructed 25 feet south of and parallel to the centerline of the tread of the abandoned sections of the Carriage Road, and*
- 1.7 miles of new trail construction not located on or immediately adjacent to the abandoned Carriage Road.

In MAs 2.1 and 3.1, Alternative 3 proposes design and construction techniques that would conform to Forest Plan Standards & Guidelines for these Management Areas. As noted above, however, in order to provide the trail connection identified in the Purpose and Need for Action, approximately 850 feet of the trail must traverse the short section of MA 6.2 lands.

In Alternative 3, this segment of trail would be located 25 feet south of and parallel to the location of the abandoned Carriage Road and would require a site-specific non-significant amendment to the Forest Plan Standards and Guidelines for MA 6.2. Standards and Guidelines appropriate for MA 6.3 would be utilized in this area which measures approximately 850 feet long and 20 feet wide, or a total of 0.4 acres. This width would include 10 feet of tread surface and five foot clearing limits on each side of the trail. During trail construction of this section of trail, some vegetation and/or minor slope re-shaping may occur outside of this 20-foot prism. This is due to equipment clearance and site-specific topographic conditions. Upon completion, however, the trail tread and clearing limits would not exceed those specified above.

Alternative 3 would include interpretive signing of the abandoned Carriage Road at each terminus of the Warren to Woodstock Snowmobile Trail and at each location that the Snowmobile Trail would cross State Route 118.

How do the alternatives compare?

This section includes a description and comparison of alternatives considered in detail for the Warren to Woodstock Snowmobile Trail Project. As stated above, the action alternatives in the Warren to Woodstock Snowmobile Trail Project are proposed to meet the purpose and need for the Project Area's Management Areas as described in the Forest Plan for MAs 2.1 and 3.1.

Comparison of Alternatives by Activities and Forest Plan Desired Condition?

Table 1 and 2 display the comparison of alternatives by activity and direction and needs identified in Forest Plan for the Project Area.

Table 1: Comparison of Alternatives by Activity

Activity	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3 Proposed Action Modified
Miles Snowmobile Trail Enhancement/Construction			
Enhancement of existing roads	0	2.8	2.8
Enhancement of existing skid trail	0	1.5	1.5
Enhancement of abandoned Carriage Rd.	0	2.8	0.0
Revegetation of Carriage Road allowed	2.8	0	2.8
New Construction			
Parallel to abandoned Carriage Road	0	0.0	2.8
New trail location	0	1.7	1.7
Total Trail Miles	**0**	**8.8**	**8.8**
Heritage Resource Interpretation	**No**	**Yes**	**Yes**
Additional Crossings of Rte 118	**0**	**2**	**2**

Table 2: Forest Plan Need and Desired Condition (DC)

Management Area	Alternative 1	Alternative 2	Alternative 3
MA 2.1:			
• Broaden the range of recreation options, mainly those offering roaded natural opportunities	Does not meet Need.	Meets Need.	Meets Need.
• noticeable human activity in these areas resulting from many uses. Evidence will usually be in harmony with the natural-appearing environment and consistent with good resource management. Roads will provide access to meet land management objectives. Selected areas will be accessible for off-road motorized forms of recreation activities	Does not meet DC.	Meets DC.	Meets DC.
MA 3.1:			
• broaden the range of recreation options, mainly those offering semiprimitive motorized experience opportunities	Does not meet need.	Meets Need.	Meets Need.
• be accessible for off-road management activities	Does not meet DC.	Meets DC.	Meets DC.
MA 6.2			
* broaden the range of recreation options, mainly those forms of semiprimitive non-motorized recreation opportunities	Does not meet Need.	Requires Forest Plan Non-Significant	Requires Forest Plan Non-significant
• Evidence of human activities will generally be unnoticeable except for trails that traverse the area and occasional recreational facilities. Recreation activities will be limited to nonmotorized dispersed use. There will be no roads.	Meets DC.	Amendment for 0.4 acres.	Amendment for 0.4 acres.

How do the alternatives compare with regard to the remaining issues?

The following measures are used to evaluate and compare how the alternatives address the issues.

Issue 1. Safety concerns related to snowmobiles crossings of State Route 118

The proposed location of the Warren to Woodstock Snowmobile Trail requires snowmobiles to cross State Route 118 at two locations. This may pose potential safety concerns for both snowmobile operators and motorists.

Measurement 1a. The number and location of trail crossings of State Route 118.

Alternative 1: A snowmobile trail crossing exists at the north end of the Project Area where the Glover Brook Snowmobile Trail crosses Route 118. This crossing would remain. There would be no additional snowmobile trail crossings of State Route 118 within the Project Area.

Alternatives 2 and 3: There would be 2 additional snowmobile trail crossings of State Route 118. The location of these crossings would be the same for Alternatives 2 and 3. Site distance and terrain features narrow the possibilities for crossing locations to those shown on Map 4.

Issue 2. Interpretation and Enhancement of the Carriage Road

The Carriage Road may offer opportunities for interpretation in its current condition. While natural revegetation of the original Carriage Road may eventually render the Road's original locations obscure, this revegetation and growth could continue and the Road could be interpreted in its reforested condition.

Alternately, the Proposed Action may offer opportunities to interpret the Carriage Road in an enhanced condition that replicates its condition at the time of original construction.

The Warren to Woodstock Carriage Road was abandoned sometime in the mid-1930s. Since its abandonment, sections of the Road have been reconstructed as Forest Service Roads and skid trails, or left to naturally revegetate. Some of the original sections of the Carriage Road that have been left to revegetate are easily discernible; others are so overgrown and without durable human-made enhancements that it is difficult or impossible to identify the location of the now-abandoned road.

The following photographs show a sample of the current condition of several characteristic sections of the Carriage Road.

Measurement 2a. The number and location of interpretive signs providing history and interpretation of the Carriage Road.

Alternative 1: No interpretation would be provided.

Alternative 2 and 3: Interpretive signs would provide information regarding the construction, past use, and abandonment of the Carriage Road. An interpretive sign would be installed at each terminus of the trail and at each crossing of Route 118. Alternative 2 signs will also include additional interpretation of the current snowmobile use of remnant portions of the Carriage Road.

Measurement 2b. The distance, in miles, of Carriage Road along which the original tread is enhanced and vegetation is removed.

Alternative 1: The No Action Alternative would allow continuing natural revegetation of the Carriage Road. Existing vegetation and vegetation that is subsequently established via natural processes would remain. There would be no mitigation of isolated, minor existing soil displacement concerns along the Carriage Road.

Alternative 2: The Proposed Action would remove the existing vegetation, including brush and saplings, that has become established within the original Road tread and remove overhanging vegetation within five feet on either side of the tread along 2.8 miles of the abandoned Carriage Road. Vegetation removal from the Road surface would be accomplished by flush-cutting (cutting at ground level) of brush and saplings. Flush cutting would protect the integrity of the original Carriage Road tread surface. Soil disturbance of the original Road surface would be minimized. The enhanced Road corridor would replicate the Road's condition

at the time of its original construction, be suitable for interpretation, readily identifiable, and conducive to over-snow snowmobile travel.

Along the 2.8 miles of Carriage Road proposed for trail location there are several locations where natural stream diversion and channeling has deteriorated the original tread surface. This alternative would repair this minor erosion and provide for proper drainage of the Road tread.

Alternative 3: The Modified Proposed Action would allow for the Carriage Road's continuing revegetation. Existing vegetation and vegetation that is subsequently established via natural processes would be allowed to remain along the Carriage Road within the Project Area. There would be no Carriage Road enhancement. The Road corridor would be available for interpretation, though not readily identifiable and, over time, progressively more obscure. Snowmobile travel would occur on the newly constructed, parallel route south of the original Road tread.

There would be no mitigation of isolated, minor existing soil displacement along the Carriage Road.

Measurement 2c. The distance, in miles, of Carriage Road along which the original tread is allowed to revegetate.

Alternatives 1 and 3 would allow for 2.8 miles of abandoned portions of the Carriage Road to revegetate.

Issue 3. Sound levels along the trail and in the vicinity of Dartmouth's Ravine Lodge may be disruptive

The construction of the Snowmobile Trail may create an increase in sound disturbances in the vicinity of the trail and Dartmouth College's property, particularly near Ravine Lodge. This change in sound level may create disturbance to visitors and to wildlife. A trail location south and east of Route 118 may avoid sound disturbance in the area near Dartmouth's property.

Measurement 3a. Anticipated change in sound levels (in decibels) due to snowmobile use along the proposed Warren to Woodstock Snowmobile Trail and at specified distances from the trail.

Alternative 1: No change would occur in existing ambient sound levels, including those associated with existing vehicle traffic on Route 118, and snowmobiles on the Glover Brook/Elbow Pond, Three Ponds and Moosilauke Carriage Road Snowmobile Trails.

Alternatives 2 and 3: Analysis considers the anticipated changes, as measured in decibel levels, above ambient sound levels including the sounds of established vehicle traffic on Route 118. Seasonally, sound levels would change along the trail and may change incrementally, though not appreciably, in the vicinity of nearby private property, particularly Dartmouth College's property near Ravine Lodge, which is normally closed during winter months, as a result of the implementation of both action alternatives.

During winter months, it is anticipated that current highway sounds would continue to be the dominant sound source within the Project Area as perceived from Dartmouth property, the nearest Dartmouth trail, Ravine Lodge, or from the highway corridor. Sound from the existing snowmobile traffic on the area's snowmobile trails is noticeable but not dominant except as perceived from the immediate vicinity of the snowmobile trails. Similarly, sound from snowmobile use on the proposed trial would be noticeable but not the dominant sound in the Project Area. The few anticipated winter hikers near the proposed trail or in the vicinity of Ravine Lodge would continue to experience sound of snowmobiles from the Moosilauke Carriage Road Snowmobile Trail, the proposed trail, and the sound of the now-existing highway traffic.

Comparison of alternatives by anticipated resource effects

The above measures will be used to quantify and evaluate direct, indirect, and cumulative effects anticipated for each alternative. These are presented in narrative form below and summarized in the Endnote section of this document, Table 13.

A detailed discussion of the affected environment, environmental consequences, and cumulative effects is provided below.

Mitigation Measures

In addition to the generally applicable Forest and Management Area-wide Standards and Guidelines listed in the White Mountain National Forest Land and Resource Management Plan in sections III and Appendix VIIB (pp. 18-22), a list of Trail Design and Construction Features, Mitigation Action s and Types can be found in the Endnote section of this document, Table 14.

Affected Environment, Environmental Consequences, Cumulative Effects, and Scoping Comment Summary

This section displays the current condition of the resources within the project area and the analysis of direct, indirect and cumulative effects of alternatives for the Warren to Woodstock Snowmobile Trail Project. A summary or resource-related comments and how each was addressed included at the end of each resource section.

Forest Plan References to Cumulative Effects

Cumulative effects consider the impacts of proposed projects at various scales across time, including past, present, and foreseeable future, and space. Cumulative effects analysis examines the effects of other activities, on National Forest and private land that may occur across the landscape that may not be readily apparent at a smaller scale.

Cumulative effects are analyzed and described for each resource area. The reason

for choosing specific cumulative effects criteria will be explained in the individual cumulative effects analysis.

This environmental assessment is tiered to the Forest Plan Final Environmental Impact Statement, (USDA, 1986, as amended) in which the cumulative effects of Forest Plan implementation have been discussed. These disclosures of potential cumulative effects have been reviewed during the site-specific analysis performed for this project and are consistent with the cumulative effects described in the Forest Plan:

Recreation ..... pp. IV-58 to IV-59

Roads ..... p. IV-59

Timber ..... p. IV-60

Visual ..... pp. IV-60 to IV-62

Wildlife ..... pp. IV-62 to IV-64

Economic Resources ..... p. IV-64

Community Well-Being ..... pp. IV-65 to IV-66

Soils and Water ..... p. IV-66

Air Quality and Noise ..... p. IV-66

Cultural resources ..... p. IV-66

Physical Environment

Transportation Facilities

Transportation Facilities Affected Environment

There are two classifications of existing roads within the Project Area. Classified Roads are wholly or partially within or adjacent to the National Forest System lands and are determined to be needed for long term motor vehicle access and may include state roads, county roads, privately owned roads, National Forest Roads, and other roads authorized for use by the Forest Service. Unclassified Roads are roads on National Forest System lands that are not managed as part of the forest transportation system, such as unplanned roads that may have existed prior to Forest Service acquisition, abandoned travelways, and off-road vehicle tracks that have not been designated and managed as a trail; and those roads that were once under permit or other authorization and were not properly decommissioned upon the termination of the authorization (36 CFR 212.1)

Transportation Facilities - Related Mitigation Measures

In addition to the generally applicable Forest-wide and Management Area Standards and Guidelines listed in the Forest Plan (§III and Appendix VIIB, pp. 18-22), the following specific mitigation or coordination measures would be used to implement Trail operations within the project area. These

site-specific mitigation measures are supplementary to the Forest-wide Standards and Guides. These specific, supplementary mitigation measures describe required resource protection measures specified for each alternative. In the Transportation/Facilities Resource section, mitigation measures are described by road/trail segment. Bridge numbers and lengths are estimated in the Trail Design and Construction Features, Mitigation Action and Type, Table 14.

Alternative 1: No Action

No mitigation measures are proposed related to Alternative 1 with regard to Transportation Facilities.

Alternative 2: Proposed Action

The Proposed Action connects the Elbow Pond and Glover Brook Snowmobile Trails (FR 156) in Woodstock to the Three Ponds Snowmobile Trail (FR 401A) in Warren. In Woodstock, the proposed trail leaves the Elbow Pond Trail which is the Elbow Pond Road, FR 156, approximately 200 feet from the start of FR 156 off Route 118.

Forest Road 156G: The trail travels 3,343 feet (.7 miles) along Forest Road 156G from the Elbow Pond Road to the gravel pit at the west terminus of Road 156G. This is a well-maintained gravel road with permanent culverts. No work is needed to make this road available for snowmobile use.

New Construction, East section: Starting at the gravel pit at the terminus of Forest Road 156G, the trail travels west 3,881 feet (.7 miles) through a dense stand of saplings. Once out of the sapling stand, the proposed trail location is in a large saw log stand on a steep south-facing slope.

In order to provide adequate drainage and streamside protection, stream conditions require construction of bridges, water bars, and dips. Outsloping and ditching will be used to control drainage and to minimize soil displacement or erosion.

Warren to Woodstock Carriage Road: The remnant Carriage Road profile in this vicinity is in generally good condition, though there are several small areas which have had localized soil displacement or timber harvest activities.

- In order to preserve the historic integrity of the remnant Carriage Road tread, all reasonable effort will be made to minimize disturbance of the original Road surface.
- Where saplings and trees have established, trees will be flush cut. Occasionally, a large stump or protruding rock may be removed.
- Holes created by stump or rock removal will be filled with material from the area immediately adjacent to the trail as was the method at the time of original trail construction in the 1840's. Restoration and snowmobile use of

these remnant sections of the Carriage Road will not adversely affect the area's transportation system.

The remnant section of Carriage Road that connects the proposed new construction west of FR 156G to its intersection with NH State Route 118 is approximately 0.7 miles. The forest adjacent to the first 0.3 miles was clear-cut approximately 15 years ago; the road has naturally re-forested with saplings 2 to 3 inches in diameter.

- Heavy logging equipment used in this area has disturbed the original Carriage Road profile; this profile would be restored to its original location and condition.

The remaining 0.4 miles of remnant Carriage Road traverse an area surrounded by larger overstory trees, dense shade, and few saplings.

In order to provide adequate drainage and streamside protection, stream conditions require construction of bridges, water bars, and dips. Outsloping and ditching will be used to control drainage and to minimize soil displacement or erosion.

A second remnant section of the Carriage Road is approximately one mile in length and located north of Route 118. This section of the Carriage Road is in generally good condition except for sections in the western half that are poorly drained and have been damaged by minor soil displacement and erosion. There are some saplings growing in the Road tread, but there are few trees due to the dense forest cover.

- Enhancement of this section of the Carriage Road would consist of cutting the in-grown saplings and small trees along the sides of the road.
- Protruding stumps would be removed and areas that are eroded would be re-contoured using water bars, dips, out sloping and ditching to provide adequate tread drainage.

In order to provide adequate drainage and streamside protection, stream conditions require construction of bridges, water bars, and dips. Outsloping and ditching will be used to control drainage and to minimize soil displacement or erosion.

The western-most portion of the Carriage Road that is included in the Proposed Action is a section approximately 1.1 miles south of Route 118.

- Fill will be needed adjacent to Route 118 to provide adequate and safe snowmobile approach areas south of the road. These approach areas will be approximately 12 feet wide and 30 feet long and may require 30 to 50 yards of fill material. Fill will be obtained off-Forest or from excess material from nearby State road projects.

The eastern 0.6 miles of this section of the Carriage Road is in good condition. The next 0.2 mile has small, isolated sites with erosion and trenching as much as 2 feet wide and 3 feet deep. The remaining 0.3 mile passes through clear cut and heavily cut older forests. In general, trail construction in this section of the trail is similar to other sections of the Carriage Road, except in the area of the clear cuts

where the Carriage Road is virtually obliterated. The original Carriage Road profile will be reestablished in this section.

In order to provide adequate drainage and streamside protection, stream conditions require construction of bridges, water bars, and dips. Outsloping and ditching will be used to control drainage and to minimize soil displacement or erosion.

Forest Roads 211A, 211 and 210: This 2.1 mile section of the proposed trail is located on existing Forest Service Roads. Forest Road 211A is a low standard road with native material surface and no permanent cross drainage. To make this road suitable for snowmobile use it will be necessary to install cross drainage in the former culvert locations.

In order to provide adequate drainage and streamside protection, stream conditions require construction of bridges, water bars, and dips. Outsloping and ditching will be used to control drainage and to minimize soil displacement or erosion.

Forest Road 211 is well maintained and has permanent cross drainage. No additional work is needed to use this road as a snowmobile trail.

Forest Road 210 is a low standard road with native material surface. In order to provide adequate drainage and streamside protection, stream conditions require construction of bridges, water bars, and dips. Outsloping and ditching will be used to control drainage and to minimize soil displacement or erosion.

Existing Skid Trail: The existing skid trail measures approximately 1.5 miles and was used in the Blodgett Brook Timber Sale. A short section of new construction, approximately 300 feet will be needed to connect Forest Road 210 to the existing skid trail. Average cleared width of the existing skid trail is approximately 18 feet. This is wider than needed for the snowmobile trail. Vegetation growing in the clearing consists of raspberries, grass and other young pioneer species. There are no trees to cut although saplings are starting to become established. The skid trail is situated perpendicular to the slope; much of the trail has a small ditch line on the uphill side.

In order to provide adequate drainage and streamside protection, stream conditions require construction of bridges, water bars, and dips. Outsloping and ditching will be used to control drainage and to minimize soil displacement or erosion.

Water bars, dips, out sloping and ditching will be used to control drainage.

Since the skid trail is not part of the road system no transportation mitigation measures are needed. A new skid trail may be needed to implement future management activities.

New Construction, West side: New construction on the west side of NH Route 118 totals 1.0 mile. From the west end of the skid trail, 0.2 miles of the proposed trail passes through a recently acquired parcel of land that is currently growing a dense stand of saplings. The next 0.5 miles winds through a stand of hardwood trees. The last 0.3 miles pass through two clear cuts that were harvested in 1997 as part of the Batchelder Brook Timber Sale.

- The area on both ends is rocky and will require earth work to provide a level snowmobile riding surface.
- Outsloping, water bars, and dips will control drainage.

In order to provide adequate drainage and streamside protection, stream conditions require construction of bridges, water bars, and dips. Outsloping and ditching will be used to control drainage and to minimize soil displacement or erosion.

Construction of this section will not adversely affect the transportation system.

Other Mitigation Measures:

- Local snowmobile clubs will be required to maintain all snowmobile traffic control signs. Snowmobile traffic control signs will be removed along Route 118 at the close of each use season.
- The trail will be closed to all summer motorized use. Existing gates will be closed in non-winter months to preclude unauthorized road and trail use. A traffic control gate will be installed at the Forest Service boundary near Batchelder Brook. The gate will be closed during non-winter months.
- Trail construction will be completed under supervision of qualified State and Forest Service personnel.
- The specific location and design of all stream crossings, drainage structures, bridges, etc. will be agreed upon between the Forest Service construction contract administrator and the contractor and/or snowmobile club construction supervisor and marked on the ground prior to installation.

Alternative 3: Modified Proposed Action

With the exception of that portion of Alternative 2 proposed for construction on the remnant portions of the Carriage Road, Alternative 3 proposes construction of the snowmobile trail in the same location and to the same standard as Alternative 2.

As an alternative to construction on the Carriage Road, Alternative 3 proposes construction of a parallel trail, approximately 25 feet south of the Carriage Road. Mitigation measures for this section of trail, including the number and length of bridges estimated above, will be the same as those described above for new construction.

Direct and Indirect Effects on Transportation Facilities

Alternative 1: No Action

This alternative would have no direct or indirect effects on the transportation system within the Project Area. Ongoing road maintenance activities within the Project Area would continue. Other road projects and activities related to subsequent analysis and decisions may occur within the Project Area.

Alternative 2: Proposed Action

This alternative would integrate portions of the following existing roads and skid trails into the proposed snowmobile trail: Forest Roads 156G, 211A, 211 and 210 and approximately 0.7 miles of FR 210 west of Blodgett Brook.

Portions of the original location of the Warren to Woodstock Carriage Road are designated as Unclassified Forest Roads 4100, 4219 and 4219A. Almost all of Roads 4219A and 4100 are included as sections of the trail location identified in the Proposed Action.

New Construction, East section: Starting at the gravel pit at the terminus of Forest Road 156G, the trail travels west 3,881 feet (.7 miles) through a dense stand of saplings. Once out of the sapling stand, the proposed trail location is in a large saw log stand on a steep south-facing slope. Construction on this section will require cutting approximately 70 large trees and cut and fill work. Construction of this section will not adversely affect the transportation system.

Warren to Woodstock Carriage Road: The newly constructed section of the trail, above, connects with the Warren to Woodstock Carriage Road. The Trail follows a portion of the Carriage Road west for 2.8 miles.

The remnant section of Carriage Road that connects the proposed new construction west of FR 156G to its intersection with NH State Route 118 is approximately 0.7 miles. The forest adjacent to the first 0.3 miles was clear-cut approximately 15 years ago; the road has naturally re-forested with saplings that are now 2 to 3 inches in diameter; these saplings will be cut during construction.

In this section, several large trees may be removed from the area adjacent to the remnant Carriage Road in order to provide adequate lateral clearance for the snowmobile trail.

The proposed trail location crosses State Route 118 twice; this crossing is in addition to the existing crossing at the Elbow Pond junction. The western-most crossing of Route 118 will be located about 200 feet west of the Carriage Road's original location. This realignment will meet DOT standards for site visibility.

New Construction, West side: New construction on the west side of NH Route 118 totals 1.0 mile. From the west end of the skid trail, 0.2 miles of the proposed trail passes through a recently acquired parcel of land that is currently growing saplings. The next 0.5 miles is in a large stand of hardwood saw logs; approximately 40 large trees would be cut. The last 0.3 miles pass through two clear cuts that were harvested in 1997 as part of the Batchelder Brook Timber Sale. Trail construction in the middle section is relatively easy with heavy equipment. The area on both ends is rocky and will require earth work to provide a level snowmobile riding surface.

Alternative 3: Modified Proposed Action

This alternative will have the same effects on transportation facilities as Alternative 2 except it would not utilize the existing Unclassified Roads Numbers 4100, and 4219A. In these sections, a parallel trail would be constructed 25 feet south of the remnant portions of the Warren to Woodstock Carriage Road.The construction of 2.8 miles of trail parallel to the existing Carriage Road will not adversely affect the existing transportation system.

Cumulative Effects on Transportation Facilities

For Transportation Facilities, the Cumulative Effects area is the Project Area as shown on Map 1 including State Route 118 and connections to existing snowmobile trails. This area was selected because an important component of project proponent requests is the linking of the proposed trail with existing snowmobile trails. The Cumulative Effects area also includes those roads on which any alternative will specify construction or reconstruction as well as roads on which future timber sales in the vicinity may require timber hauling. Temporally, the Cumulative Effects are evaluated for the foreseeable ten years.

Road 156 G may serve as an access road for future timber management including the proposed Batchelder Brook Timber Sale; accommodations for dual use may be required at the time of sale implementation. Accommodations could include widening the road to allow snowmobile use adjacent to the current road surface, by-passing the road with a trail parallel and north of the road, seasonal closures, scheduled daily closures, or a combination thereof. It is likely that use of this road for vegetation management would be limited to one operating season or less; it is unlikely that timber sale activity would utilize the road for more than one year. In all cases, the appropriate time to determine the type and timing of mitigation measures would be during the analysis of any subsequent proposed vegetation management.

Forest Roads 211 and 211A are the access roads for vegetation management for the adjacent land. No vegetation management activity is under consideration for this area for several years. Subsequent management activity may require accommodations for dual road use. These accommodations could include widening the road to allow snowmobile use adjacent to the current road surface, by-passing the road with a trail parallel north of the road, seasonal closures, scheduled daily closures, or a combination thereof.

Forest Road 210 is a low standard road with native material surface. This road probably will not be used for timber access in the future since in a previous decision the Forest Service acquired and constructed NFSR 407 which accesses the same area, including lands west of Blodgett Brook. If this road is used as proposed it may be necessary to make an accommodation for vegetation management in the future. This may be done by widening the road clearing to allow snowmobile use next to the road, bypassing the road with a trail parallel and east of the road or a

combination. It is likely that use of this road for vegetation management would be limited to one operating season or less; it is unlikely that timber sale activity would utilize the road for more than one year. In all cases, the appropriate time to determine the type and timing of mitigation measures would be during the analysis of any subsequent proposed vegetation management.

New Construction, West side: This section would connect to the existing snowmobile trail system.

The long-term use of all roads within the Project Area including Forest Service all season and temporary roads and skid trails will remain unchanged. No roads will be permanently closed; no new roads will be constructed within the Project as a result of implementation of the Warren to Woodstock Snowmobile Trail Project.

Scoping Comment Summary and Response – Transportation Facilities

Scoping comments were received that express concern for safety of snowmobile trail crossings of Route 118. Snowmobile trail crossings of state highways are a frequent situation through New Hampshire. In fact, a crossing of State Route 118 exists north of the Project Area where the Elbow Pond Snowmobile Trail crosses State Route 118. There have been no reported accidents involving motor vehicles and crossing snowmobiles on Route 118. The NH Department of Transportation reports that, state-wide, there are no recorded motor vehicle/snowmobile collisions at state permitted snowmobile trail crossings. The two new crossings proposed in Alternatives 2 and 3 would meet state standards for visibility and location and would be appropriately permitted and signed.

A commentor expressed concern that snowmobile operators would leave the proposed trail location and ride on Route 118. As is true elsewhere throughout the state, this is a prohibited activity and would be subject to state law enforcement. As is true throughout the White Mountain National Forest, enforcement of snowmobile restrictions on state highways is under the jurisdiction of the State and beyond the scope of this analysis. There is a designated snowmobile trail crossing of Route 118 in the north of the Project Area where the Glover Brook/Elbow Pond snowmobile crosses Route 118. From this intersection, conceivably, a snowmobile operator could ride along Route 118 to Woodstock or to Warren. While possible, this illegal and unsafe use is not known to occur; there is no indication that the construction of the Warren to Woodstock Snowmobile Trail would instigate this illegal activity.

A commentor suggested that the state widen Route 118 to accommodate snowmobile traffic on the shoulder or in close proximity to the road. This alternative was considered but eliminated from further consideration, see Alternatives, "Why were some alternatives eliminated from detailed consideration," above.

Concern was expressed for the "need" of the Warren to Woodstock snowmobile trail. While the "need" for any recreation or social value is a matter of subjective evaluation, the State Bureau of Trails as well as snowmobile clubs and users have all expressed long-term interest in and support for the establishment of the Warren

to Woodstock Snowmobile Trail. This documented support has continued for more than 10 years. The Forest Plan also clearly identifies a desired condition for this area that includes the development of motorized recreation opportunities; this also establishes "need" for consideration of this Proposed Action.

Several commentors expressed concern that the trail would provide access for illegal recreational ATV use. Forest-wide existing illegal ATV use on closed roads, hiking trails, cross country ski trails and snowmobile trails remain at relatively low levels. Resource impacts are generally minor and temporary in nature. Forest Service law enforcement officials have observed that properly located and installed traffic gates control 90% of illegal ATV use elsewhere on the WMNF. Under the required mitigation measures, the trail would be closed to ATV use and a new gate installed near Batchelder Brook. This area will be patrolled and monitored for illegal use by Forest Service law enforcement officials. If illegal use is observed, warnings and citations will be issued. Forest Protection Officers will increase ATV education efforts at trail crossings.

A commentor noted that the proposed trail is located, in part, on existing Forest Service roads that may be needed in the future for other management activities. The commentor expressed concern over this potential conflict of use in winter months. The proposed trail would be subject to and coordinated with other management activities. Conflicts in use would be addressed using alternate routes, the construction of temporary parallel routes, daily or periodic closures to snowmobile traffic, etc. These accommodations would be determined at the time and in the context of the analysis of the proposed management activity. The construction of the Warren to Woodstock Snowmobile Trail does not imply or confer exclusive use to snowmobile traffic. The Forest Service would endeavor to minimize impacts to snowmobile traffic, but it is reasonable to expect periodic temporary disruption or relocation of use.

Soil Resource

Soil Resource Affected Environment

Soils along the proposed Warren to Woodstock Snowmobile Trail are among those where roads, trails and parking lots are commonly built on the White Mountain National Forest. There are no extraordinary soil hazards. For example, there is no risk of dry debris slides (landslides) because these occur at much higher elevations where there are shallow, gravelly soils overlying steep areas of bedrock. Also, there is no risk of deep soil slumps. Soil slump hazards occur along major streams and rivers and on very steep land which is depicted as break land ecological land type. Field reconnaissance and review of our ecological inventory map indicate no break land ecological land types in this area.

Soil conditions, including depth, texture, drainage and plasticity are shown in the following table for the proposed trail. The surface erosion rating refers to the wearing away of the soil surface through single grain movement actuated by surface runoff for surfaces bared of all vegetation. The ratings are only relative to the

Ecol. Land Type	Depth	Surface Soil Texture	Drainage Class	Plasticity	Trail Length (feet)	Surface Erosion Hazard
102c	Shallow	Fine Sandy Loam	Excessive	Non-plastic	680	High
105d	Deep	Sandy Loam	Well	Non-plastic	8310	Low
115a	Deep	Fine Sandy Loam	Moderately Well	Non-plastic	3960	High
115c	Deep	Fine Sandy Loam	Well	Non-plastic	14730	High
115g	Deep	Fine Sandy Loam	Moderately Well	Non-plastic	11070	High
15j	Deep	Very Fine Sandy Loam	Moderately Well	Non-plastic	4350	Moderate
15k	Deep	Fine Sandy Loam	Moderately Well	Non-plastic	1360	High
2	Shallow	Fine Sandy Loam	Excessive	Non-plastic	690	High
415c	Deep	Fine Sandy Loam	Well	Non-plastic	1190	High
6	Deep	Fine Sandy Loam	Well	Non-plastic	330	High

White Mountain National Forest.

The existing roads, which in places the trail would use, are well maintained, and do not show any signs of accelerated soil erosion. The forested areas where the new trail would be constructed are covered with leaf litter, and there are no signs of notable soil erosion. The slopes range from gentle to steep, and most of the proposed trail would often be on side slopes which facilitate successful surface water management.

Mitigation Measures

Other than generally applicable Forest-wide and Management Area Standards and Guidelines listed in the Forest Plan (§III and Appendix VIIB, pp. 18-22), soil mitigation measures and Best Management Practices for this site include: staged construction during dry periods of the year stipulating no more than 500 linear feet of exposed trail surface at any one time, incorporating drainage structures, silt fences, hay bales and slope stabilization by the most appropriate means available under the guidance of qualified personnel.

Direct and Indirect Effects on Soil Resources

Alternative 1 - No Action

No soil erosion is likely along the existing roads because surface water is properly managed to safe outlets in accord with standards and guidelines. No noteworthy soil erosion is occurring along the route proposed for new construction because it is well-vegetated, there is leaf cover and, no mineral soil is exposed to the impacts of raindrop splash.

Alternative 2 - Proposed Action

Limited, site-specific soil erosion is likely to occur during construction. The most risk is where the trail is located where the soil is shallow to ledge; however, these land types are a very small portion of the trail length, the slopes are not steep, and trails often cross these soils. Careful trail location and administration of construction will minimize soil erosion. Most of the soils crossed are deep, well or moderately well drained, and are the kinds of soils on which roads and trails are routinely constructed without soil erosion impacts. No slopes are excessive. There are no dry debris slides or deep soil slump hazards. Drainage structures, ditches and slope stabilization will prevent soil erosion. Staged construction will also help prevent soil erosion. Indirect effects are discussed in the water quality section. Stumping of trees along the 2.8 miles of the historic Carriage Road will cause little, or no, soil erosion.

Alternative 3 - Modified Proposed Action

The effects on soil erosion will be similar to the Proposed Action. The only possible exception is that there may be slightly more impact in those places where new construction exposes more mineral soil to avoid use of the historic carriage road. However, this may be offset by slightly better opportunities for control of surface water than exists on the old carriage road. Overall, the soil erosion hazards are similar to the Proposed Action since the soils crossed are the same.

Cumulative Effects on Soil Resource

The cumulative effects area (CEA) for water resources is the Moosilauke Brook and Wentworth Warren Tributaries watersheds. (See Map in Water Resources, Affected Environment section.) This scale watershed was selected because it includes all the headwaters of the streams which flow through the project area, and at this scale the effects of multiple uses within the watershed could become additive and result in cumulative effects. Roads and trails are a small part of these watersheds. The cumulative effects analysis period is the past ten years and next ten years because this takes into account recent timber sale and road maintenance

activities for timber and recreation purposes and possible future vegetation management activities.

Alternative 1 - No Action

The Proposed Trail occurs in an area which is, overall, heavily forested. Nearby roads, both Forest Service and public highways, are properly designed and well-maintained. Past and possible future timber sales minimize soil erosion by control of season of harvest, proper layout of skid trails and landings, and careful sale administration during and after the sale. The Batchelder Brook Timber Sale is being analyzed at this time for implementation in 2006. The gravel pit near the start of the Elbow Pond Road is deep, excessively drained sand soils with very low soil erosion hazard. No cumulative soil erosion is expected with the No Action Alternative.

Alternative 2 - Proposed Action

This alternative only contributes the new trail to possible cumulative impacts. Given the success at preventing soil erosion with past timber sales through proper road and skid trail location, and use of winter tree harvesting, no cumulative soil erosion impacts are anticipated. This outcome is bolstered by the absence of extraordinary soil hazards, especially dry debris slides and deep soil slumps. Staged construction during dry periods of the year will help minimize the risk of cumulative soil erosion. In addition, this trail, plus all roads, is part of routine road and trail maintenance activities.

Alternative 3 - Modified Proposed Action

This Alternative has cumulative soil erosion impacts similar to the Proposed Action. The 25-foot offset to avoid the old Carriage Road may slightly increase the potential of cumulative soil erosion impacts, but the difference is marginal given the soils involved and the mitigation measures regularly applied.

Scoping Comment Summary and Response – Soil Resources

A commentor expressed concern about soil erosion along the trail in general; there was no reference to a site-specific area of concern. As stated above, the trail is located on soils on which roads and trails are commonly constructed on the White Mountain National Forest. There are no extenuating conditions along the proposed trail location that would cause additional or significant soil erosion. Trail location, Forest Plan Standards and Guides, and the mitigation measures stated above, including staged construction, prompt seeding, and mulching would further mitigate any soil erosion concerns either during or following construction. Upon completion, over-snow use would not cause any soil erosion concerns. The trail would be closed to motorized vehicles during non-winter periods.

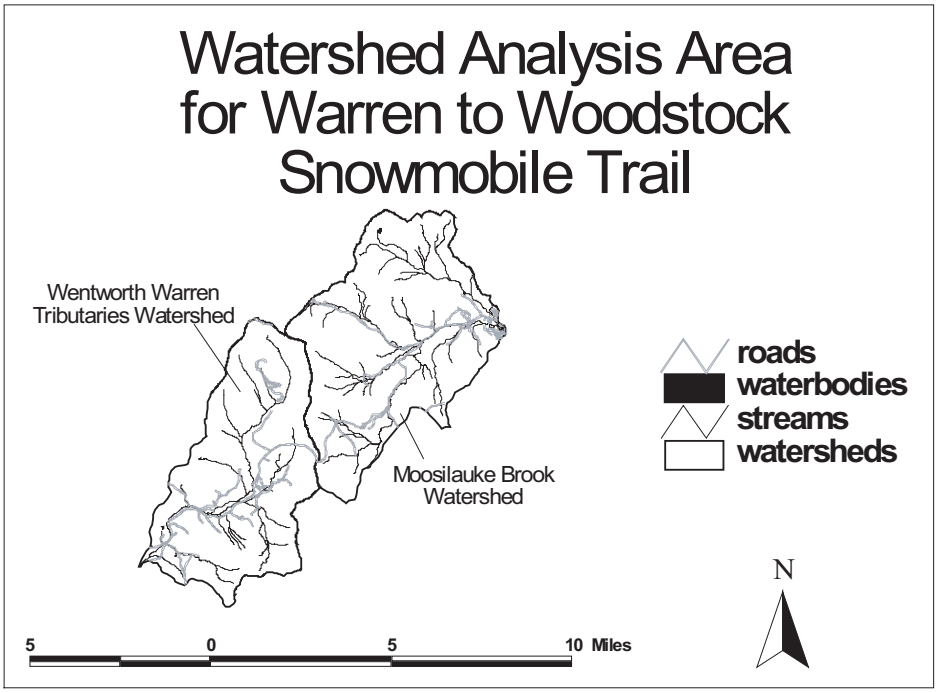
Water Resources

Water Resources Affected Environment

The proposed Warren to Woodstock Snowmobile Trail Project is located in the Wentworth Warren Tributaries watershed and the Moosilauke Brook watershed. The Wentworth Warren Tributaries are the headwaters of the Baker River, while Moosilauke Brook flows into the Pemigewasset River. Both watersheds are official 12-digit hydrologic unit code (HUC) watersheds as part of the National Hydrography Dataset. The Wentworth Warren Tributaries watershed is HUC 010700010401, while the Moosilauke Brook watershed is HUC 010700010202. Their total acreage is approximately 32,600, and they comprise the analysis area for effects on water resources.

The watershed of Wentworth Warren Tributaries contains approximately 14,900 acres. It is aligned north to south with the outlet to the south. Gorge Brook, Big Brook, Little Brook, Merrill Brook, and two unnamed perennial channels enter the Baker River from the west. East Branch, Blodgett Brook, Batchelder Brook, and one unnamed perennial channel enter the Baker River from the east. Numerous intermittent channels are located throughout the watershed. The southern border of the watershed is located just upstream of where Berry Brook flows into the Baker River. To the north, the watershed is bordered by Mount Jim, Mount Blue, and Mount Moosilauke.

Moosilauke Brook watershed contains approximately 17,700 acres and flows from southwest to northeast. Moosilauke Brook forms where the Lost River and Walker Brook join. Just downstream, Jackman Brook enters Moosilauke Brook



from the south. Jackman Brook is the largest tributary to Moosilauke Brook. Pike Brook and Crooked Brook also enter Moosilauke Brook from the south, while Gordon Pond Brook and Smith Brook enter Moosilauke Brook from the north. Numerous intermittent channels are located throughout the watershed. The eastern border of the watershed is located where Moosilauke Brook enters the Pemigewasset River. To the southwest, the watershed is bordered by Mount Cushman and Green Mountain. Mount Wolf borders the watershed to the northwest.

Channel Stability

Riparian areas and stream courses on the White Mountain National Forest, including the Wentworth Warren Tributaries and Moosilauke Brook watersheds, are generally considered to be properly functioning. This means that the streams and their associated riparian areas exhibit the attributes and processes that are appropriate to each riparian area's capability and potential. Benefits applicable to riparian areas include dissipating stream energies associated with high flows, filtering sediment, development of diverse channel characteristics to provide habitat for aquatic biota, and protection of streambanks from scour.

A riparian area is a term used by the Forest Service that includes stream channels, lakes, adjacent riparian ecosystems, flood plains, and wetlands. On the White Mountain National Forest, riparian areas are classified as riparian types (see Summary of Management Terms, below). In the Moosilauke Brook and Wentworth Warren Tributaries watersheds, riparian types 10, 11, 12, 13, 16, 17, 20, 30, 35, flume, and cascade occur. In the watersheds, smaller order streams tend to be higher gradient channels. The large portions of the higher gradient types 10, 11, 12, 13, 16, 17, flume, and cascade have a bottom material that is dominated by boulders, cobble, and bedrock. This provides for channel stability and minimal lateral channel adjustment. These channels tend to withstand high flows and changes in runoff regimes without significant bank erosion or channel adjustment due to structure from boulders, cobble, and bedrock. Ninety-four percent of both the Wentworth Warren Tributaries watershed and the Moosilauke Brook watershed exhibit these stable characteristics.

In contrast, the larger stream order and lower gradient riparian types such as 20, 30, and 35 have a larger component in the bedload of finer material such as gravel and sand. The lower gradient, combined with a less resistant bedload and bank material, result in a less stable channel more prone to adjustment from changes in runoff and high flow events. These channels rely on vegetation and woody material for channel stability and often have a wider active floodplain due to more active meandering processes. In the Wentworth Warren Tributaries watershed, 1.4 miles of the main stem Baker River and 1.0 miles of tributary to the Baker River exhibit these characteristics. In the Moosilauke Brook watershed, 0.6 miles of Jackman Brook, the lower 0.6 miles of Gordon Pond Brook, and the lower 1.1 miles of Moosilauke Brook exhibit these characteristics.

Water Quality

Surface waters on national forests are considered Outstanding Resource Waters (ORW) by the state of New Hampshire. This ensures that "water quality shall be maintained and protected in surface waters that constitute ORW, except that some limited point and non-point source discharges may be allowed providing that they are of limited activity which results in no more than temporary and short-term changes in water quality" (NHDES, 1999). Such temporary and short-term degradation shall only be allowed after all practical means of minimizing such degradation are implemented. Best Management Practices (BMPs) and other mitigations, as described in this report and elsewhere in the EA, represent "all practical means" and would be used should an action alternative be selected.

There are approximately 25 miles of existing snowmobile trails within the two watersheds. There are two ways that snowmobile trails can alter water quality. The first way is the change in water chemistry caused by by-products of gasoline combustion and fuel and oil leaks that are deposited on the top layer of snow. The second way is related to the physical ground disturbance caused by the snowmobile trail that can cause erosion and subsequent transport of sediment into streams.

Sediment

Research has shown that surface erosion occurs on most forest roads because their surfaces, cutslopes, fillslopes, and associated drainage structures are usually composed of erodible material and are exposed to rainfall and concentrated surface runoff (USDA Forest Service, 1999). These effects are reduced through the use of Best Management Practices (BMPs) such as proper ditching and drainage structures and minimization of road grade. Snowmobile trails are similar to forest roads in that they are comprised of the trail surface, cutslopes, fillslopes, and drainage ditches, which are all susceptible to erosion. Steep areas with large cutslopes and fillslopes are most susceptible to erosion. However, unlike forest roads, snowmobile trails which are used only in winter receive less compaction than roads or trails used year-round. This reduced compaction allows more water to infiltrate rather than erode the trail surface. In addition, grading does not occur along a snowmobile trail, which further reduces soil impact.

Snowmobile trail construction involves the removal of trees along the trail surface, but other small vegetation is allowed to remain. Roads research has shown that roads which had litter and grass on them had significantly less soil loss than unvegetated roads (Costantini et al., 1999). Maintaining vegetation on snowmobile trails minimizes soil loss and subsequent sedimentation of streams.

There is no data on suspended sediment, bedload, or turbidity in the Moosilauke Brook or Wentworth Warren Tributaries watersheds during runoff events. It is likely that increased sediment from the roads and trails in the Moosilauke Brook and Wentworth Warren Tributaries watersheds is reaching streams in localized areas during periods of runoff. Sediment input to streams is most common at steam crossings and at locations in which roads or trails closely follow streams.

In the Moosilauke Brook watershed, there are 10.9 miles of existing hiking trails and 15.3 miles of existing snowmobile trails. Total trail density averages 8 feet per acre, and 14% of the trails are within 100 feet of a mapped perennial or intermittent stream channel. This includes numerous stream crossings. There are 27.3 miles of existing roads, with an average density of 8 feet per acre in this watershed. Twelve percent of these roads are within 100 feet of a stream channel.

In the Wentworth Warren Tributaries watershed, there are 24.7 miles of existing hiking trails and 10.0 miles of existing snowmobile trails. Total trail density averages 12 feet per acre. Fourteen percent of these trails are within 100 feet of a stream channel. This includes numerous stream crossings. In this watershed, there are 27.3 miles of existing roads. Road density averages 10 feet per acre, and 14 percent of the roads are within 100 feet of a mapped perennial or intermittent stream channel.

Mitigation Measures

In addition to following Forest Plan Standards and Guidelines and State Best Management Practices regulating snowmobile trail construction, the following mitigations are recommended:

- Bridges will be used for all stream crossings. Bridges reduce channel disturbance by keeping construction and traffic out of the active channel. Bridges are also less likely than culverts to plug and cause sediment inputs to streams.
- Erosion control measures including seeding and mulching exposed soil on cutslopes and fillslopes will occur immediately after trail construction. Promptly implemented erosion control measures are more effective at reducing sediment than those implemented later.
- Trail should cross streams at, or as close to, 90 degrees as possible. Minimize the length of snowmobile trail that is within 50 meters of flowing water. Risk of water contamination is lower when snowmobile trails are a minimum of 50 meters away from flowing water. Bridges should be of adequate length that their sills are outside the normal high flow.

Direct and Indirect Effects on Water Resource

Alternative 1 - No Action

There would be no new direct or indirect effects on channel stability or water quality as a result of implementation of Alternative 1 (No Action). Streams and riparian areas in the Moosilauke Brook and Wentworth Warren Tributaries watersheds would continue to function much in the same way as present. Chemical water quality would remain high and would continue to meet water quality standards. Forest Plan direction, Standards & Guidelines, and Best Management Practices would continue throughout the project area. Current and ongoing management activities would continue, but no new federal management activities related to this proposed project would be initiated.

Alternative 2 and 3 - Proposed Action and Modified Proposed Action

The I-93 railbed snowmobile corridor receives extensive snowmobile use each winter. A portion of snowmobilers who currently use the railbed snowmobile corridor are expected to shift their use from this corridor to the proposed Warren to Woodstock trail. It is not anticipated that there will be a net increase in snowmobile use; rather, an estimated 250 snowmobiles per week that currently utilize the railbed corridor will relocate to the proposed trail. However, the I-93 corridor is outside of the Moosilauke Brook and Wentworth Warren Tributaries watersheds. Snowmobile usage would therefore slightly increase in these watersheds, and decrease in the watershed of the I-93 corridor (See Cumulative Effects section).

The State of New Hampshire Department of Resources and Economic Development Trail Bureau estimates that use on the proposed trail would be 250 snowmobiles per week (NHDRED, 2004).

Channel Stability

Channel stability was considered when determining the location of the proposed snowmobile trail. By taking channel stability into account during trail planning and design, it was ensured that the trail does not follow stream corridors, and trees along the stream channel would only be removed at designated crossing sites. Properly locating the trail minimizes the potential impacts of the trail to water courses. If either Action Alternative were selected, four perennial stream crossings and numerous intermittent stream crossings would occur along the 8.8 mile Warren to Woodstock Snowmobile Trail.

The riparian classifications and recent field review in the Moosilauke Brook and Wentworth Warren Tributaries watersheds indicate that the streams within these watersheds are relatively stable. The perennial stream crossings would occur at riparian types 11, 12, and 20. (See Riparian Type definitions in Endnotes.) The stream crossings would initially cause some disturbance to the stream banks, but proper use of mitigation measures would allow the banks to quickly recover and stabilize. Problems associated with stream crossings can be very persistent (Stafford, et al., 1996), so monitoring of stream crossings is important and would be conducted following trail construction and during use.

Water Quality

Water Chemistry

Effects of current snowmobile use on water chemistry will be discussed by looking at snowmobile research and applying findings to the Moosilauke Brook and Wentworth Warren Tributaries watersheds. Most of the snowmobile research has been conducted in Yellowstone National Park. It is expected that the types of

snowmobiles ridden in the White Mountain National Forest are similar to those ridden in Yellowstone National Park; the types of emissions produced by snowmobiles in the two regions would also be similar. In contrast, however, Yellowstone receives nearly 54,000 visitors per season traveling via a single corridor (Hagemann and Van Mouwerik, 1999). Expected use of the Warren to Woodstock Snowmobile Trail is 250 vehicles per week over the course of an average 16-week snowmobiling season, or a total of 3,000 snowmobiles per season.

Research has revealed concerns that snowmobile emissions that are deposited on the top layer of snow may eventually reach surface or ground water. The organic compounds of most concern include: benzene, toluene, ethylbenzene, and xylenes (BTEX); methyl tertiary butyl ether (MTBE); and polycyclic aromatic hydrocarbons (PAHs). Sulfate and ammonium are inorganic compounds which pose potential threats to water quality in areas of heavy snowmobile use (Hagemann and Van Mouwerik, 1999).

Sulfate and ammonium are inorganic contaminants associated with snowmobile use. If sulfate and ammonium reach groundwater or surface water, acidification is a possible result (summarized by Hagemann and Van Mouwerik, 1999; Ingersoll et al, 1997). The study in Yellowstone found average and maximum concentrations of 68.8 and 160 microequivalents per liter (μeq/L) of sulfate, respectively in snowmelt (Ingersoll, 1999). The U.S. Environmental Protection Agency National Secondary Drinking Water Regulations recommend a limit of 5,208 μeq/L (250 mg/L) of sulfate (USEPA, 2004), so concentrations in Yellowstone were well below recommended standards. The same Yellowstone study found average and maximum concentrations of 0.5 and 1.4 microequivalents per liter (μeq/L) of ammonium, respectively in snowmelt runoff (Ingersoll, 1999). This does not exceed water quality standards for the state of New Hampshire. The high level of snowmobile usage in Yellowstone has not caused water quality standards for sulfate and ammonium to be exceeded. It is therefore unlikely that current snowmobile usage in the White Mountain National Forest is causing water quality standards to be exceeded for these parameters.

This statement is further supported by water quality monitoring conducted in the White Mountain National Forest. Ongoing water quality monitoring is conducted seasonally at 20 monitoring sites scattered throughout the Forest. The results of this monitoring indicate that ammonium and sulfate concentrations fall well within the water quality standards of the EPA and state of New Hampshire. Current snowmobile usage is therefore not likely causing significant increases in sulfate and ammonium, and subsequent acidification of streams in the forest.

Of the BTEX compounds tested in a 1998 Yellowstone study, only toluene persisted in snowmelt runoff waters. The other BTEX compounds tended to volatilize into a gaseous state following snowmelt, and thus are not a concern to stream water quality. Despite the fact that toluene reached surface waters, its highest concentration recorded in snowmelt was less than 1% of the drinking water standard published by the US Environmental Protection Agency (Ingersoll, 1999; USEPA, 2002).

Toluene concentrations in the White Mountain National Forest are unknown. However, ammonium and sulfate were shown to be good tracers of toluene concentrations (Ingersoll, 1999). Low sulfate and ammonium concentrations in surface waters throughout the forest indicate that current snowmobile usage in the forest is not likely causing significant increases in toluene concentrations.

Research in Yellowstone has also shown elevated concentrations of MTBE in areas of high snowmobile use. The maximum concentration of MTBE in the snowpack was 374 nanograms per liter (ng/L or parts per trillion). This concentration was reduced to <10 ng/L in the snowmelt runoff, indicating that most of the MTBE did not reach the streams (Ingersoll, 1999). In 1997, the U.S. Environmental Protection Agency adopted an advisory level for MTBE in drinking water of 20,000-40,000 ng/L, which is over 50 times higher than the maximum concentration found in the snowpack.

MTBE concentrations in snowmelt in Yellowstone National Park were significantly less than federal drinking water standards. Existing snowmobile trails in the White Mountain National Forest do not support the same levels of use as Yellowstone National Park. It is therefore unlikely that current concentrations of MTBE in streams in the Project Area would approach federal standards.

PAHs are the last organic compounds of concern in regard to water chemistry impacts from snowmobiles. These compounds occur naturally in crude oil and are released as fuel is burned (Hagemann and VanMouwerik, 1999). PAH concentrations as low as 5-70 ng/L were found to be toxic to aquatic life (Oris, et al., 1998). No studies have been published to measure the presence of PAHs in snow, surface water, or groundwater as a result of snowmobile use. However, Mill Creek in Keene, New Hampshire is the only waterbody in the state listed as exceeding PAH standards (NHDES, 2004). The PAH standard at Mill Creek was exceeded due to the presence of coal tar sediment deposits from a former gas plant, not snowmobile or vehicle emissions (Comstock, 2004). Therefore, current snowmobile usage on the White Mountain National Forest is not causing PAH standards to be exceeded.

In summary, current snowmobile use in the White Mountain National Forest does not appear to have caused water quality standards to be exceeded for BTEX, MTBE, PAH, sulfate, or ammonium.

Forest-wide water quality monitoring indicates that ammonium and sulfate concentrations fall well within the water quality standards of the state of New Hampshire. High snowmobile usage in Yellowstone National Park did not cause sulfate and ammonium water quality standards to be exceeded. It is therefore unlikely that the relatively small increase in snowmobile usage in the Project Area would cause water quality regulations for these parameters to be exceeded or to cause acidification of the streams, as snowmobile use in Yellowstone is much larger than that expected in the Warren to Woodstock Project Area.

Low sulfate and ammonium concentrations in surface waters throughout the Forest indicate that current toluene concentrations are likely low. Increased snowmobile

usage in the watersheds would not likely approach the high levels of use seen at Yellowstone National Park. Toluene measured in snowmelt in Yellowstone was significantly less than federal drinking water standards. It is therefore unlikely that snowmobiles on the Warren to Woodstock trail would cause toluene water quality standards to be exceeded.

MTBE concentrations in snowmelt in Yellowstone National Park were significantly less than federal drinking water standards. Snowmobile trails in the White Mountain National Forest do not support the same levels of use as Yellowstone National Park. It is therefore unlikely that future concentrations as a result of the proposed snowmobile trail would approach federal standards.

In addition, a recent press release from the NH Department of Environmental Services states, "The U.S. Environmental Protection Agency has announced its intention to approve New Hampshire's request to opt out of the federal Reformulated Gasoline Program (RFG). Final approval would signify dramatic progress in the effort to eliminate MTBE from the state's gasoline supply" (NHDES, 2004). If MTBE were eliminated from New Hampshire's gasoline supply, then this contaminant would be of less concern.

Current levels of snowmobile use are not causing PAH standards to be exceeded. It is therefore unlikely that future concentrations of PAHs as a result of the proposed snowmobile trail would approach state or federal standards.

Research in Yellowstone indicated that sampling sites 50 meters from snowmobile trails had similar concentrations of all major ions as sampling sites 1000 meters from snowmobile trails. These values were also similar to values elsewhere in the Rocky Mountain region. This research concluded that water contamination from snowmobiles is less likely 50 meters away from snowmobile trails than on the trail (Ingersoll, 1999). If this were applied to the White Mountain National Forest, then keeping the proposed Warren to Woodstock snowmobile trail at least 50 meters away from flowing water would help minimize water quality concerns.

Of the 8.8 miles of trail proposed in Alternative 2, only 0.9 miles lie within 50 meters of mapped perennial and intermittent channels. Approximately half of the 0.9 miles are located at stream crossings, the other half are within the buffer due to topographic considerations. Under Alternative 3, 2.8 miles of the snowmobile trail would be moved approximately 25 feet south of the Carriage Road. The distance between the snowmobile trail and mapped perennial and intermittent streams would be roughly the same as seen in Alternative 2.

The proposed snowmobile trail encompasses 13.2 acres (assuming 12 feet wide and 8.8 miles long) of two watersheds which total 32,600 acres in size. Therefore, only a small portion of the watersheds have the potential for impact. This potential water chemistry impact would occur only during snowmelt and would quickly be diluted in the channel. By maintaining distances between the snowmobile trail and water bodies, and the small temporal and geographic scale of the project, changes in water chemistry are unlikely to cause water quality standards to be exceeded for either Action Alternative.

Sediment

The amount of sediment mobilized is related to the amount of disturbance, which is an indicator of the area across which increased sediment transport could occur. During development of the trail, new trail construction would cause the greatest amount of disturbance. Restoration of the remnant portions of the Carriage Road would also cause minor ground disturbance as portions of the tread surface are repaired and drainage added and/or improved. Utilization of existing Forest Service roads and skid trail causes the least amount of disturbance, as these existing travelways may be adequate in their current condition or require only drainage structures to make them useable snowmobile trails. In Alternative 2, there would be 1.7 miles of new trail construction, 2.8 miles of road restoration, and 4.3 miles of existing roads utilized. In Alternative 3, there would be 4.5 miles of new trail construction and 4.3 miles of existing roads utilized. Therefore, the potential for sediment mobilization is greater for Alternative 3 than Alternative 2.

The effects of sediment mobilization are related to the proximity to a water source. As discussed in the water chemistry section of this report, only 0.9 miles of the proposed trail lie within 50 meters of a mapped perennial or intermittent channel. These buffers would minimize the ability of mobilized sediment to reach a stream.

Most effects related to road restoration and trail construction are short term in duration through the use of the mitigations listed above and adherence to Forest Plan Standards and Guidelines and State Best Management Practices. Turbidity values would decrease to near zero as the trails revegetate and stabilize. During storms, turbidity increases related to snowmobile trails would probably continue to occur as long as bare soil is exposed. However, since the increases in turbidity occurs only during storm events when turbidities are naturally elevated, it is not likely these increases would have an effect on aquatic life, stream morphologies, or overall water quality in the watershed. This effect of sediment transported from the forest road and trail system is currently being monitored through the forest wide water quality monitoring plan that takes annual samples across the forest to track numerous water quality parameters, including turbidity.

The direct and indirect effects of sedimentation on water quality from both the Action Alternatives are anticipated to be small and temporary. Existing snowmobile trails throughout the White Mountain National Forest provide examples of the conditions in which the proposed trail would be in several years if the same standards and guidelines are followed. Snowmobile trails are generally stable, showing little evidence of sheet or rill erosion. Water quality remains high in the watersheds.

As discussed previously, waters of the National Forest are designated as "Outstanding Resource Waters." In the Project Area, the proposed Action Alternatives would not violate these standards, as mitigations outlined above would be implemented. Water quality monitoring would be conducted in the watersheds following trail construction to ensure that these standards are not exceeded.

In addition, the Forest Plan EIS (IV-25) states that there have been no documented cases of damage to fish or other aquatic organisms due to sediment on the forest.

There has also been no mention of sediment as an impacting factor to water quality or aquatic life in any of the monitoring plans.

Cumulative Effects on Water Resource

The cumulative effects area (CEA) for water resources is the Moosilauke Brook and Wentworth Warren Tributaries watersheds. This scale watershed was selected because it includes all the headwaters of the streams which flow through the project area, and at this scale the effects of multiple uses within the watershed could become additive and result in cumulative effects. As water flows downstream, pollutants are mobilized into the watershed, and changes in water quality related to the project merge with other waters within the watershed. The outlet of the cumulative watershed boundary is the Baker River and Pemigewasset River. This scale CEA is large enough to integrate processes within the watersheds and gather the result to a single point at the outlet of each watershed.

Elbow Pond Road was improved through graveling the road and installation of culverts in 1997. Other than routine maintenance, this is the only recreation project to occur in the cumulative effects area in the last 10 years. No additional Forest Service recreation projects are expected to occur in the cumulative effects area in the next decade.

Timber harvesting has occurred within the cumulative effects area in the past ten years and is anticipated to occur during the next decade. Field review of the project site has indicated that the streams are stable and show no major signs of impact from this activity. Continued tree removal is not expected to cause state water quality standards to be exceeded or channel stability to become impacted.

Acid deposition is caused primarily by the emission of sulfur and nitrogen oxides from the burning of fossil fuels by electric and motor vehicles. Sulfur and nitrogen react with rainwater through chemical reactions. These reactions lower the pH of rain, thereby increasing acidity. The rainwater reacts with soil, vegetation, and water, resulting in changes in chemistry across the ecosystem (Likens and Borman, 1995). The air pollution that causes acid rain largely originates outside of the forest and the state of New Hampshire. Although some increases in sulfur and nitrogen have been seen on the White Mountain National Forest as a result of acid rain, it is not considered to be at levels which impair aquatic life. The additive sulfate from snowmobile use related to this project is not expected to add appreciably to this effect.

Approximately 9,300 of the 32,600 acres in the cumulative effects area are not National Forest lands. Numerous roads are located on these private lands, and it is likely that timber harvesting is occurring and will continue in the future. At present there are no surface waters listed as not meeting water quality standards within the cumulative effects area, and the streams in this area show no major signs of impact from impervious surfaces.

Alternative 1 - No Action

Alternative 1 would result in no cumulative effects on water resources. The existing condition described in the affected environment would remain much the same, with some exceptions. Timber harvesting will continue on National Forest land, and may occur on private land. Development of private land may also occur. Continued activities in the watershed are not expected to cause water quality standards to be exceeded or channel stability to become impaired.

Alternatives 2 and 3 - Action Alternatives

By following Forest Plan Standards and Guidelines, State BMPs, and additional mitigation measures listed in the document, cumulative effects of the Proposed Warren to Woodstock Snowmobile Trail on channel stability and water quality would be within those analyzed/anticipated in the Forest Plan and would be within state standards. This conclusion is reached, because, as discussed in the Direct/ Indirect Effects section, no unacceptable effects from the activities proposed in the Project Area would occur, should either action alternative be implemented.

Scoping Comment Summary – Water Resources

There were no site specific substantive comments received regarding water quality or quantity.

Fish and Other Aquatic Species

Affected Environment

The Project Area contains portions of 4 USGS named perennial streams Patch, Batchelder, Blodgett, and Jackman Brooks with proposed trail bridge crossings (see the Transportation and Water Resource Sections). MIS Eastern brook trout are present in Patch Brook. During a site-specific field review, MIS Eastern brook trout were also documented in Batchelder Brook, but Blodgett Brook did not appear fish bearing via a direct sampling method. The headwater portion of Jackman Brook with proposed trail bridge crossings is also non-fish bearing. The Project Area also contains intermittent and seep areas suitable to semi-aquatic species, but are generally avoided during management activities such as trail construction.

Mitigation Measures

No additional mitigations are recommended beyond compliance with Forest Service Standards and Guidelines and State Best Management Practices.

Direct and Indirect Effects on Fish and Aquatic Species

Alternatives 1, 2, and 3

Alternative 1 would cause no direct or indirect effects to fish or aquatic species or their habitat.

The Proposed Action and Alternative 3 would cause low potential for localized, short-term direct effects of turbidity on MIS Eastern brook trout and other aquatic species and their habitat from soil generated and transported during trail construction, enhancement, and maintenance activities. However, because of bridges, soil and water best management practices, and Forest Plan Standards and Guidelines, there would be very low potential for minor and localized indirect effects of substrate sedimentation near stream crossings.

Cumulative Effects on Fish and Aquatic Species

Alternatives 1, 2, and 3

The analysis area for cumulative effects included the Project Area and the temporal scope was the past 3 years and foreseeable future of 10 years. There would be no cumulative effects on MIS Eastern brook trout or other aquatic species or their habitat (see also the BE in the project file for potential effects to the Regional Forester-listed Sensitive wood turtle).

Scoping Comment Summary – Fish and Aquatic Species

There were no site specific substantive comments received regarding fish and aquatic species.

Air Resource

Affected Environment

The proposed Warren to Woodstock Snowmobile trail is located within the White Mountains airshed, which is the body of air which lies over the Forest. The Project Area is located on the west slopes of the predominately north south trending valley of the Pemigewasset River and on the east slopes of the Baker River valley. Under the Clean Air Act, Class I air quality areas are afforded the nation's highest level of protection from air pollution. In the White Mountain National Forest, the Class I air quality areas are located in the Presidential Range-Dry River Wilderness and the Great Gulf Wilderness. The Project Area is designated a Class II air quality area, and is about 13 miles away from the nearest Class I air quality area. Regional winds move from west to east. Local winds are dominated by mountain valley dynamics interacting with large-scale atmospheric movements.

There are six major federally regulated air pollutants called National Ambient Air Quality Standards (NAAQS). They are ozone, carbon monoxide, nitrogen dioxide, particulate matter, sulfur dioxide, and lead. The project area is not located in a

nonattainment area for any of the NAAQS. The closest nonattainment area is for ozone and is located in Merrimack, Hillsborough, Rockingham, and Strafford Counties in southern New Hampshire (U.S. Environmental Protection Agency, 2004). It can be seen from the occurrence maps that ozone appears to originate around large urban centers and migrates northward to the White Mountain region during times of high temperature and air stagnation. The Project Area is approximately 6 miles from the closest part of Merrimack County.

Air toxics are chemicals in the air that are known or suspected to cause cancer or other serious health effects (U.S. Environmental Protections Agency, 2004b). These are regulated for stationary sources of air pollution. However, there are no federal standards for air toxics produced by mobile sources (Rumba, personal communication).

Emissions in the air or air pollution that occurs in the Project Area are mostly related to regional sources as well as local sources of vehicle emissions and dust from roads. Fire contributes particulates and carbon monoxide to the air. Dust from roads contributes particulates. Automobile and snowmobile emissions are associated with carbon monoxide (CO), hydrocarbons (HC), particulate matter (PM), oxides of nitrogen (NOx), sulfur dioxide (SO_2), and ammonia (NH_3) (Montana DEQ, 2004; NPS, 2000). While in the presence of sunlight, some of these pollutants combine to form ozone.

None of these air pollutants currently exceed New Hampshire or federal ambient air quality standards except for short time periods from ozone, wood stoves, wildland fires, and prescribed fires. On occasion, ground-level ozone in the area exceeds air quality standards. This occurs mostly in summer months due to weather and air flow, and is not frequent enough for the area to be categorized as a nonattainment area. Wildland and prescribed fire do not occur in the area at a large scale. Most fires in the White Mountain National Forest are less than 5 acres in size. However, on occasion fires have exceeded 100 acres in size.

Snowmobiles are generally equipped with two-stroke engines. These engines discharge up to one-third of their fuel unburned into the environment (Bluewater Network, 2002). Evaporative emissions occur when the liquid fuel evaporates and fuel molecules escape into the atmosphere. A considerable amount of hydrocarbon pollution results from evaporative emissions (U.S. Environmental Protection Agency, 2004b). These emissions also contribute to odors along snowmobile trails.

Two-stroke engines are one of the largest sources of hydrocarbon pollution nationwide (Bluewater Network, 2002). Hydrocarbons contain compounds classified as air toxics (1,3-butadiene, benzene, formaldehyde, acetaldehyde, toluene, and polycyclic aromatic hydrocarbons) (NPS, 2000). Air toxics from snowmobiles emissions are present in similar proportions to those observed from other sources such as automobiles (White et al., 1997). In New Hampshire, human health risk from air toxics appears to be driven by a small number of pollutants, including benzene, 1,3-butadiene, and formaldehyde, which are found in vehicle

exhaust (Rumba, 2000). Air toxics risks in New Hampshire tend to be higher in the southern, more densely populated part of the state, and lower in the northern, less densely populated areas. The Warren to Woodstock Project Area lies in an area of lower risk (Rumba, personal communication).

Ammonia is also emitted from gasoline-powered vehicles. Research has shown that these emissions from snowmobiles are low (NPS, 2000). Ammonia emissions are not regulated by NAAQS and are not air toxics. However, ammonia emissions can potentially cause acidification of streams (summarized by Hagemann and Van Mouwerik, 1999). This is discussed in further detail in the water resources section, above.

Related Mitigation Measures

No additional mitigations are recommended beyond compliance with Forest Service Standards and Guidelines and State Best Management Practices (BMPs).

Direct and Indirect Effects on Air Resource

The direct/indirect effects airshed includes the upper Pemigewasset River valley and the Baker River valley because the potential effects to air quality generated by any of the proposed activities are likely limited to those areas of operation within the airshed, and are not expected to extend any further. These airshed boundaries are the same as two 10-digit HUC watershed boundaries (Upper Pemigewasset River and Baker River).

The primary sources of concern for air quality related to the proposed project are emissions from snowmobiles. Nationwide, snowmobiles currently emit more than 220,000 tons of hydrocarbons and 580,000 tons of carbon monoxide each year (U.S. Environmental Protection Agency, 2002). Snowmobiles create up to 1,000 times more carbon monoxide pollution than a typical car (Bluewater Network, 2002). However, carbon monoxide tends to dissipate into the atmosphere quickly rather than remaining in the immediate vicinity of the point of release. Particulate matter, nitrogen oxides, sulfur dioxide and ammonia are also concerns.

The I-93 railbed snowmobile corridor receives extensive snowmobile use each winter. A large portion of the snowmobilers who currently use the railbed snowmobile corridor are expected to shift their use of this corridor to the proposed Warren to Woodstock trail. Both the railbed snowmobile corridor and the proposed Warren to Woodstock Snowmobile Trail fall within the same airshed. Construction and availability of the Warren to Woodstock trail is expected to displace rather than increase overall snowmobile use in this airshed. The New Hampshire Department of Resources and Economic Development Trail Bureau estimates that use on the proposed trail would be 250 snowmobiles per week (NHDRED, 2004).

Alternative 1 - No Action

No activities would be implemented that are related to the proposed Warren to

Woodstock Snowmobile Trail. Other management activities within the Project Area will continue; additional projects may be implemented following appropriate analysis. Current traffic patterns along Route 118 will continue.

Alternatives 2 and 3 - Action Alternatives

The direct effect of a snowmobile trail on air quality is emissions related to snowmobile use. In both action alternatives, the Warren to Woodstock Snowmobile Trail would primarily displace use from the snowmobile trail which currently parallels the I-93 railbed corridor. Since both snowmobile trails fall within the same airshed, and total use is expected to be displaced rather than increased, air quality impacts from the proposed trail are not anticipated to increase from their current state.

Carbon monoxide, particulate matter, nitrogen dioxide, ozone, and sulfur dioxide are federally regulated by NAAQS. Current concentrations of these pollutants do not exceed standards. Since the proposed snowmobile trail is not expected to increase the volume of snowmobiles in the region, the Warren to Woodstock trail is not expected to cause these standards to be exceeded.

Benzene, 1,3-butadiene, and formaldehyde are the primary hydrocarbons of concern in New Hampshire (Rumba, 2000). However, since there are no state or federal standards for air toxics emitted by mobile sources, no standards have been exceeded. Current air toxics concentrations throughout the airshed would remain much the same should an Action Alternative be selected, as snowmobile use in the airshed is not expected to increase.

Ammonia emissions are not regulated by NAAQS and are not considered air toxics. As discussed in the water resources report, water quality monitoring in the White Mountain National Forest indicates that ammonia concentrations do not exceed water quality standards.

If snowmobile usage were to shift from the I-93 snowmobile corridor to the Warren to Woodstock trail, the odors associated with snowmobile usage would also shift between the two trails. However, since the two trails are in the same airshed, odors in the whole airshed are expected to remain relatively constant overall.

The indirect effect of snowmobile trails on air quality is the potential increase in dust caused by exposed soils during construction. This dust from trails contributes briefly to particulate matter (PM) in the air. Grasses and other non-woody vegetation would be encouraged on the snowmobile trail. Any increases in PM from the trail would be small and temporary and would reduce as vegetation becomes established.

Cumulative Effects on Air Resource

The cumulative effects airshed includes the upper Pemigewasset River valley and the Baker River valley, because the potential effects to air quality generated by

any of the proposed activities are likely limited to those areas of operation within the airshed, and they are not expected to extend any further. Temporally, cumulative effects analysis on air considered activities within the past ten years as well as those anticipated ten years into the future. New EPA-mandated emissions standards for snowmobiles will take effect on all new snowmobiles beginning in 2006. It is anticipated that between 2006 and 2014 the pre-emission standard snowmobiles will be replaced with the new models; it is expected that by 2014, the vast majority of snowmobiles used in the area will meet the new emission standards.

Recreation projects have occurred throughout the cumulative effects area. This includes trail and road improvements, as well as routine maintenance. No additional Forest Service recreation projects beyond routine maintenance are expected to occur in the cumulative effects area in the next decade.

Timber harvest has occurred within the Project Area in the past ten years and is anticipated to be proposed and analyzed during the next decade. The primary source of concern for air quality related to timber harvesting is the use of heavy equipment, motor vehicles, and gas-operated tools during harvest and road maintenance. The most significant emissions from motor vehicles are nitrogen oxides (NOx) and particulate matter (PM). Federal air quality standards have not been exceeded for these compounds in the project area.

Approximately half of the 250,000 acres in the cumulative effects area are not National Forest lands. Numerous roads are located on these private lands, and it is likely that increased development may occur. Wood burning occurs and will continue to occur in this area. It is also likely that timber harvesting is occurring and would continue in the future.

The New Hampshire Department of Environmental Services has reported that there are 8 stationary sources of air pollution within the cumulative effects area (NHDES, 2004).

There are currently no state or federal standards for air-toxics emitted by mobile sources. However, the US Environmental Protection Agency initiated the Cumulative Exposure Project (CEP) in 1994 to look at cumulative impacts of multiple toxic pollutants. Benzene, 1,3-butadiene, and formaldehyde concentrations exceed the CEP health-risk screening benchmark everywhere in New Hampshire. However, average risk levels of these compounds in New Hampshire are well below national averages.

Alternative 1 - No Action

No local emissions related to the proposed action would occur. The existing condition and trends as described in the affected environment would remain much the same. However, increased development and timber harvesting within private land in the cumulative effects area is anticipated to occur. Timber harvesting on Forest Service land would also continue. Emissions would still not lead to violations, and therefore no cumulative effects would occur.

Alternatives 2 and 3 – Proposed Action and Modified Proposed Action

The Action Alternatives would result in the same emission-producing activities as was discussed in the Direct/Indirect Effects section of this report. Construction and availability of the Warren to Woodstock trail is expected to displace rather than increase overall snowmobile use in this airshed. In addition, it could be assumed that vehicle usage and wood burning may continue to increase in the cumulative effects area as the private land is developed. Timber harvesting would also continue to occur on both private and public land. Stationary sources of air pollution would remain.

New snowmobile emissions regulations will be put into effect within the temporal boundaries of the cumulative effects. These standards will apply to new snowmobiles produced in 2006 or later and will not apply to older snowmobiles. Snowmobile manufacturers may use emission controls such as direct fuel injection for two-stroke engines and increasing production of four-stroke engines. These emission controls will reduce hydrocarbon, carbon monoxide, and particulate matter emissions, while maintaining or slightly increasing nitrogen oxide emissions. Permeation emissions from snowmobile fuel systems will also be controlled with new requirements (U.S. Environmental Protection Agency, 2002).

The emissions related to the proposed action are not of a large enough scale to exceed NAAQS and cause the area to be classified as non-attainment for criteria pollutants, even when combined with ongoing activities on public land and potential activities on private land. In addition, air toxics concentrations should begin to decrease in 2006, as new snowmobiles with emission controls replace older model snowmobiles. Therefore, no cumulative effects to class 1 airsheds or human health are anticipated.

Scoping Comment Summary and Response – Air Resources

Comments were received that request quantification of current automobile use of Route 118 and projected use of snowmobiles along the proposed trail. These use estimates are reported in the Sound section of this document, below.

Comments regarding potential effects on air quality are addressed above.

A comment requested data regarding automobile tail pipe emissions along Route 118. Auto emissions standards are beyond the scope of the Warren to Woodstock Snowmobile Trail project; the decision to construct a snowmobile trail in the Project Area would have no effect on auto emissions in the Project Area.

Biological Environment

Vegetation

Vegetation Affected Environment

Woody Vegetation

The woody vegetation found in the Project Area is the characteristic Northern Hardwood Type. American Beech, Sugar Maple, and Yellow Birch are the most common species, are the core of the stands, and dominate the stand overstory. Red spruce, Balsam fir, Hemlock, Red maple, Paper birch and White ash are also commonly found and occur in variable amounts. Less common but usually present are White pine, Red oak, Aspen, and Black cherry.

Eastern hemlock, Beech, Sugar Maple and Yellow birch often occupy a mid-story position. Understories are usually comprised of Beech, Stripe maple, Hobble bush and Mountain maple.

For a vegetative management history of the Project Area, see "What past, present, and future activities are relevant to the Warren to Woodstock Snowmobile Trail Project", above.

Federal Endangered Species Act and Regional Forester-listed Plants.

This section summarizes the probability of occurrence of Federally Threatened, Endangered, Proposed (TEP), and Regional Forester-listed Sensitive (RFSS) plants for the Warren to Woodstock Snowmobile Trail Project Area. These plants (collectively referred to as TEPS) were addressed in detail in the Warren to Woodstock BE (located in the project file). Several TEPS listed for the WMNF require alpine and sub-alpine habitat, and these habitats do not occur within the Project Area (Sperduto and Cogbill 1999, NHNHI-Sperduto 1992). Thus, there is no probability of alpine plants occurring in the Project Area such as the recently federally de-listed endangered Robbins' cinquefoil *(Potentilla robbinsiana)*. Also, the USFWS's pogonia habitat model did not generate a map showing potential suitable habitat for the federally-listed threatened small whorled pogonia *(Isotria medeoloides)* within the Project Area.

The Forest Service checked the NHNHB statewide database of rare plants for known documented occurrences within or near the Warren to Woodstock Project Area (NHNHB-Cairns 2004). The recent database check included results of a past survey (NHNHI-Sperduto 1992) which documented the occurrence of a small population of Regional Forester-listed sensitive American ginseng (*Panax quinquefolius*) located near Patch Hill (which the proposed Warren to Woodstock Snowmobile Trail would avoid). Also, the Forest Service conducted multi-seasonal, multi-year and site-specific field reviews of the proposed Project Area and documented common herbaceous plant species typically found in the northern hardwood forests of the WMNF along with the American ginseng previously documented (see the project file).

The Warren to Woodstock BE (in the project file) disclosed there is a low probability of occurrence of several Regional Forester Sensitive Species within the Project Area as shown in Table 3. Probability was based on known documented occurrences, site-specific field surveys, and suitable habitat present within the Project Area was assumed occupied.

Table 3 - TEPS Plants with Probability of Occurrence Within The Warren to Woodstock Project Area.

Status	TEPS Plant Species	Probability of Occurrence
RF-Sensitive	Bailey's sedge *(Carex baileyi)*	low = ditches/forested wetlands
RF-Sensitive	Clustered sedge *(Carex cumulata)*	low = clearings/open woods.
RF-Sensitive	Squirrel-corn *(Dicentra canadensis)*	low = moist woods.
RF-Sensitive	Goldie's woodfern *(Dryopteris goldiana)*	low = rich mesic forest.
RF-Sensitive	Broad-leaved twayblade *(Listera convallarioides)*	low = wet shady woods.
RF-Sensitive	Chilean sweet cicely *(Osmorhiza berteroi)*	low = deciduous forest.
RF-Sensitive	American ginseng *(Panax quinquefolius)*	Documented/trail would avoid.
RF-Sensitive	Nodding pogonia *(Triphora trianthophora)*	low = beech hardwoods.
RF-Sensitive	Auricled twayblade *(Listera auriculata)*	low = alder thickets.
RF-Sensitive	Mountain avens *(Geum peckii)*	low = wet meadow, rocky stream

Other Species of Concern Plants for the WMNF

During the WMNF Forest Plan Revision process, several plants that are not listed on the current Eastern Region 9 Regional Forester Sensitive Species list (USDA 2000) were identified as having a potential viability concern on the WMNF (USDA 2003a). These species are termed Other Species of Concern (OSC) plants and were reviewed for probability of occurrence in the Project Area (Vegetation Report in the Project file). There are no known documented occurrences of OSC plants within the Warren to Woodstock Project Area (NHNHB-Cairns 2004).

Non-Native Invasive Species (NNIS)

The site-specific field reviews of the Project Area previously mentioned found no NNIS within the Project Area. However, New England Wildflower Society surveys documented there are few known existing occurrences of NNIS sites on Forest Service land within the Town of Woodstock (NEWFS 2001) that are associated with roadside ditches. The Forest Service removed a small population of Japanese knotweed located north of Elbow Pond along State Route 118. Despite the occurrence of invasive plants such as Japanese knotweed, purple loosestrife, and phragmites on other portions of the forest, recent forest-wide surveys for NNIS

documented that the WMNF has a limited problem with invasive plants (NEWFS 2002). Non-native invasive plants are likely used on private lands during landscaping and likely present along roadsides adjacent to and outside of the immediate Project Area.

Vegetation - Related Mitigation Measures

- If listed plants are found during project implementation, the forest botanist would be alerted, and further protective measures would be taken.
- Use native vegetation and straw (when available) during re-vegetation per Executive Order 13112, 23/99.
- Along remnant sections of the Carriage Road, saplings will be cut flush with the original tread surface and all ground disturbances will be minimized.
- In areas of new construction, trail location will minimize cutting of trees.

Direct and Indirect Effects on Vegetation

The general effects of changes in vegetative diversity can be found in the Forest Plan FEIS, pp. IV-32 and IV-33.

Alternative 1: No Action

Under the No Action Alternative, trees and shrubs would continue to naturally reforest the remnant sections of the Carriage Road. Over time, the original tread and road profile of the Carriage Road would be increasingly difficult and ultimately impossible to discern without maintenance (i.e. tree removal).

The No Action alternative does not preclude timber harvest as may be proposed, analyzed and implemented as part of any separate and subsequent project proposal in the Project Area.

Alternative 2: Proposed Action

In the remnant sections of the Warren to Woodstock Carriage Road, tree removal will include numerous saplings less than 6 inches in Diameter at Breast Height (DBH) that have become established within the road tread. In addition, there are approximately 27 trees per mile on remnant portions of the Carriage Road, or 76 trees, that measure between 6 and 8 inches DBH and would be removed. No trees greater than 8 inches DBH were identified during sampling of the remnant portions of the Carriage Road.

Cut trees would be retained on site to serve wildlife habitat and nutrient cycling needs. In addition, shrubs would be removed and exposed soil will be seeded with native or suitable non-native species during trail construction.

In the portion of the trail that would be new construction, approximately 228 trees per mile, or 390 trees greater than 6" DBH, some of which are saw logs, would be removed in areas of new construction. This estimate also includes isolated larger

trees adjacent to the trail that may need to be removed to provide access for necessary equipment for trail construction.

There would be little impact to the canopy cover along the trail; the trail tread surface is approximately 10 to 12 feet and clearing limits an additional 5 feet on each side. The overstory would fully re-occupy the site within several years.

The Forest Plan specifies goals for lands designated as MA 2.1 including "Provide moderate amounts of high quality hardwood sawtimber and other timber products on a sustained yield basis." Forest Plan Goals for MA 3.1 include "Provide large volumes of high quality hardwood sawtimber on a sustained yield basis and other timber products through intensive timber management practices." Harvest of trees within the remnant sections of the Carriage Road is in compliance with MA 2.1 and 3.1 Goals. The cutting of the trees and saplings along the trail would be incidental to its construction; the trees and saplings would not be removed from the site. While not providing a tangible commercially processed forest product, cutting of woody vegetation for other purposes is clearly in compliance with the Goals for the MAs 2.1 and 3.1 as established in the Forest Plan.

The Forest Plan Goals for the MA 6.2 lands include "Establish large expanses of relatively undisturbed landscapes". Alternative 2 would remove a small number of young trees and saplings in an approximately 0.4 acre corridor of MA 6.2 lands on remnant sections of the Carriage Road. Tree cutting in the MA 6.2 lands would include the removal of numerous saplings and 4 to 6 individual trees that are 6" to 8" DBH. This level and intensity of removal of vegetation proposed would fall well within the parameters of this MA's Forest Plan Goal regarding relatively undisturbed vegetative landscape. The narrow, linear cutting of trees would not constitute a substantive landscape disturbance.

Taken in context, the crossing of the MA 6.2 lands by New Hampshire Route 118 in the immediately vicinity of the trail constitutes a more noteworthy and a previously existing landscape disturbance bisecting the narrow corridor of MA 6.2. Furthermore, the Warren to Woodstock Carriage Road and Route 118 have existed as landscape features since the 1840's, long pre-dating the Forest Plan and Management Area designation. It can be reasoned that the Forest planning process recognized these previously existing features and passively accommodated them within the MA 6.2 lands as a conforming use. The removal of saplings and 4 to 6 trees measuring 6" to 8" DBH does not pose a significant landscape disturbance within this MA.

The presence of the snowmobile trail would not preclude subsequent vegetation management in the Project Area in 2.1 and 3.1 lands.

Alternative 3: Modified Proposed Action

Alternative 3 proposes most of the activities included in Alternative 2 with the exception of restoration of the sections of remnant Carriage Road. No tree removal

or trail building would take place in these sections, rather a parallel trail would be constructed approximately 25 feet south of the centerline of the Carriage Road.

These sections of the proposed trail would require new construction and tree removal of an *additional* 2.8 miles of trail comprising approximately 5.6 acres of predominantly mature, mixed hardwoods. Total new construction considered in this alternative is 4.5 miles which would remove numerous saplings and an estimated 1,025 trees larger than 6" DBH.

Alternative 3, as Alternative 2, would remove trees in MAs 2.1 and 3.1 and is in compliance with the Forest Plan within these management areas. Alternative 3 would also remove a small number of trees and saplings in an approximately 0.4 acre corridor of MA 6.2 lands *adjacent* to the Carriage Road; this removal of vegetation also falls well within the parameters of this MA's Forest Plan Goal.

The Forest Plan Goals for the MA 6.2 lands include "Establish large expanses of relatively undisturbed landscapes". Tree harvest in the MA 6.2 lands would include the removal of numerous saplings and 4 to 6 individual trees that are 6" to 8" DBH. This level and intensity of removal of vegetation falls well within the parameters of this MA's Forest Plan Goal regarding relatively undisturbed vegetative landscape.

Taken in context, the crossing of the MA 6.2 lands by New Hampshire Route 118 in the immediately vicinity of the trail constitutes a more noteworthy and a previously existing landscape disturbance bisecting the narrow corridor of MA 6.2. The removal of saplings and 4 to 6 trees measuring 6" to 8" DBH does not pose a significant landscape disturbance in this MA.

The presence of the snowmobile trail would not preclude subsequent vegetation management activity within the Project Area.

Cumulative Effects on Vegetation

The removal of the saplings, young trees, and isolated larger trees within the trail's clearing limits will not cause significant cumulative effects. Alternatives 2 and 3 would harvest trees along a serpentine path approximately 20 feet wide for approximately 4.5 miles. Most of the trees to be cut are saplings and trees less than 6 inches DBH. In context of the Project Area and the WMNF, the cumulative effect of the removal of young trees and saplings on approximately 1/1000th of 1% (one one-thousandth of one percent) of the WMNF is insignificant with regard to canopy cover, species composition, and diversity.

Mitigation Measures for TEPS & OSC Plants & Non-Native Invasive Species (NNIS):

Previously listed Forest Service Standards and Guidelines and State Best Management Practices for woody vegetation apply. Also, equipment cleaning provisions per the Forest Service Guide to Noxious Weed Prevention Practices (USDA 2001c) also apply.

Direct & Indirect Effects on TEPS & OSC Plants & NNIS:

The general effects of changes in vegetative diversity can be found in the WMNF Forest Plan FEIS, pp. IV-32 and IV-33.

Alternative 1 - No Action

Understory shrubs and herbaceous vegetation would continue to grow, mature, and die under natural processes. Course woody material would be recruited onto the forest floor as trees die. Natural open canopy patterns would occur.

Due to no snowmobile trail construction or use, Alternative 1 would have no direct or indirect effects of tree and vegetation removal resulting in increased sunlight on TEPS or OSC plants, trampling, soil or snow compaction, increased human presence, or introduction of noxious invasive weeds in the Project Area.

Alternative 2 - Proposed Action

Direct Effects:

The potential direct effects to Federal TEPS or OSC plants include trampling and soil compaction by machinery during trail construction, enhancement, and maintenance activities. Because few large trees of various size classes would be removed from approximately 3.4 acres for new trail construction along with minor amounts of vegetation removal (ranging 2-4 inches DBH) on prior disturbed FS skid trails and woods roads and the Historic Carriage Road, the direct effects are anticipated to be relatively minor and localized within the proposed linear corridor of the snowmobile trail. The documented occurrence of the American ginseng population would be avoided entirely, and wet areas that some plants favor are routinely excluded during trail layout per Forest Plan Standards and Guidelines (USDA-FS 1986a, LRMP VII-B-20, #2, 3, & 17).

Indirect Effects:

Potential indirect effects of Alternative 2 include changes in local environmental gradients (i.e. moisture, heat, and light levels) in the soil and mid-story and upper tree canopy via vegetation and tree removal for trail construction and enhancement. Plants located approximately one tree length from the edge of the proposed trail construction, enhancement, and maintenance activities would be affected. Soil compaction could prevent plants from becoming established, or soil scarification could trigger growth of some plants that lie dormant for long periods. Increased or varied sunlight reaching the forest floor could benefit RF-listed sensitive species that are shade intolerant such as clustered sedge that grows in open woods and clearings, but would not benefit shade tolerant broad-leaved twayblade that grows in deep shade. A study suggests that trail systems are an important component for the survivability of native wildflowers in Maine, especially those considered to be critical or imperiled. The grooming and the sledding of the trail system affect the survival of the wildflowers by encouraging and maintaining suitable habitats for the

wildflowers (University of Maine Research cited in Alberta Snowmobile Association, 2004). Construction of the proposed Warren to Woodstock Snowmobile Trail would cause the indirect effect of snow compaction during winter use and maintenance activities. A snowmobile and rider exert approximately a ½ pound of pressure, which is dramatically less pressure on the earth's surface than other recreational activities (i.e., just 1/10$^{th.}$ the pressure of a hiker and 1/16$^{th.}$ the pressure of a horseback rider). Moreover, the snowmobile's ½ pound of pressure is further reduced by an intervening blanket of snow cover, hence causing minimal indirect impacts on soil dependent biotic communities (Alberta Snowmobile Association, 2004).

Alternative 3 - Modified Proposed Action

This alternative includes similar activities described under Alternative 2, with additional amounts of new trail construction proposed parallel to instead of on the Historic Carriage Road. Therefore, the direct and indirect effects discussed for Alternative 2 would be similar and non-substantial, but would occur on more acres within the Project Area under Alternative 3.

Summary of Effects to TEPS & OSC Plants & NNIS:

Table 4 summarizes the effects determinations rendered in the Warren to Woodstock Biological Evaluation (BE) for Federally-listed TEPS plant species (the BE is available in the Project File). The Vegetation Report (in the Project File) determined there would be no effects to OSC plants from the alternatives

Although there is a very low probability of occurrence of several TEP or OSC plants, there is no historic documented occurrence or findings during recent surveys within the Project Area (Vegetation Report, Project File). Standards and Guidelines previously noted would minimize disturbance and the action alternatives would not adversely affect OSC plants. There is only one documented occurrence of a small population of Regional Forester-listed Sensitive American ginseng. This population would be avoided entirely and wet areas (which some TEPS and OSC plants favor) are excluded during trail layout per Forest Plan Standards and Guidelines previously noted.

If listed plants were not discovered prior to project implementation, any of the action alternatives could cause some unavoidable impacts from management activities (USDA-FEIS 1986, IV 67-68). In general, the unavoidable impacts are most likely to correspond to the relative amounts of total acres affected (i.e. the greater the acres affected the greater the potential to affect an undiscovered plant compared to less acres affected). If listed plants are found during implementation, the Forest Service representative would alert the WMNF Botanist and additional protective measures would be taken.

Table 4: BE Effects Determinations for Federal TEPS Plants for the Warren to Woodstock Project Area

Federal Status	TEPS Plant Species	Effects Determination
RF-Sensitive	Bailey's sedge *(Carex baileyi)*	The Proposed Action and Alternative 3 may impact individuals, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species of Region Forester-listed Sensitive plant species with documented and/or potential occurrence within the Warren to Woodstock Snowmobile Trail Project Area.
RF-Sensitive	Clustered sedge *(Carex cumulata)*	
RF-Sensitive	Squirrel-corn *(Dicentra canadensis)*	
RF-Sensitive	Goldie's woodfern *(Dryopteris goldiana)*	
RF-Sensitive	Broad-leaved twayblade *(Listera convallarioides)*	
RF-Sensitive	Chilean sweet cicely *(Osmorhiza berteroi)*	
RF-Sensitive	American ginseng *(Panax quinquefolius)*	
RF-Sensitive	Nodding pogonia *(Triphora trianthophora)*	
RF-Sensitive	Auricled twayblade *(Listera auriculata)*	
RF-Sensitive	Mountain avens *(Geum peckii)*	

Cumulative Effects on TEPS & OSC Plants & Non-Native Invasive Species

The cumulative effects analysis area included the Warren to Woodstock Snowmobile Trail Project Area to address local plant populations, and the WMNF to address plant population trends and viability within the forest-wide planning area (36 CFR 219.19). The temporal scope is the reasonably foreseeable future of 10 years. This time period may include the Batchelder Brook Timber Sale which would follow similar Standards and Guides and avoid impacts to listed plant resources.

Alternative 1 - No Action

Alternative 1 proposes no trail construction, enhancement, or maintenance activities; this alternative would cause no direct or indirect effects of trampling vegetation, soil or snow compaction, or increased sunlight in the Project Area. Thus, there would be no cumulative effects to TEPS, OSC plants, or NNIS.

Alternatives 2 and 3 - Proposed Action and Modified Proposed Action

The Proposed Action and Alternative 3 would cause overall localized and relatively minor direct or indirect effects to TEPS, OSC plants, and not purposely introduce

or spread noxious invasive weeds. Therefore there would be no cumulative effects to TEPS, OSC plants, or NNIS.

Scoping Comment Summary and Response – Vegetation and TEPS & OSC Plants & Non-Native Invasive Species

A commentor theorized that the proposed trail could cause habitat fragmentation and possible entry for invasive plants. The Warren to Woodstock Snowmobile Trail would cause a relatively minor amount of vegetation age-class and type conversion within the heavily forested White Mountain National Forest landscape, which is usually not considered forest fragmentation. Recent site-specific field reviews found no noxious invasive weeds within the Warren to Woodstock Project Area. New England Wildflower Society surveys documented there are few known existing occurrences of noxious invasive weed sites on Forest Service land within the Town of Woodstock (NEWFS 2001) that are associated with roadside ditches.

The Forest Service is aware of this occurrence of a small population of Japanese Knotweed located along State Highway Route 118 in the Town of Woodstock located north of Elbow Pond. The proposed Warren to Woodstock Snowmobile Trail is located well away from these plants and the trail would not cross State Route 118 anywhere near these plants. Furthermore, the Forest Service removed these plants this year and will repeat the effort until eradicated. The action alternatives include mitigation measures that require equipment cleaning provisions per the Forest Service Guide to Noxious Weed Prevention Practices (USDA 2001c) during the snowmobile trail construction activity. Further, there is a markedly reduced potential for spreading noxious invasive weeds during the winter when snowmobile activity would occur. Finally, the action alternatives do not include actions that would purposely introduce or spread noxious invasive weeds.

Wildlife Resources

Affected Environment

The Forest Service conducted multi-seasonal, multi-year, and site-specific field reviews within the Project Area. Information from these reviews, ongoing annual wildlife monitoring, and prior analysis of management activities in the same sub-watersheds as the Project Area were used to describe the affected environment, determine probability of occurrence, and analysis of effects to wildlife resources. The Warren to Woodstock Snowmobile Trail Project Area does not contain special, unique or exemplary communities such as old growth stands, mapped alpine bogs, ravines, meadows, high cliffs, rocky talus slopes, vernal pools, caves, or mining tunnels. None of the ecosystems or habitats affected by the alternatives are scarce, unique, or regionally at risk.

TEPS: Table 5 shows the probability of occurrence of TEPS within the Project Area (see the Warren to Woodstock BE in the project file). Probability was based on extirpation, historic or current documented occurrence, and/or suitable habitat present (assumed occupied).

Table 5. TEPS With Probability Of Occurrence Within The Warren to Woodstock Project Area.

Federal Status	TEPS Wildlife Species	Probability of Occurrence
Endangered	Indiana bat* *Myotis sodalis*	Very low = summer roost/forager in open areas.
Threatened	Canada lynx** *Lynx canadensis*	Considered absent from the WMNF (USDI 2003).
RF-Sensitive	Peregrine falcon *Falco peregrinus anatum*	Low = summer flyover / forager in openings.
RF-Sensitive	Eastern small-footed myotis *Myotis leibii*	Very low = summer forager in forest openings.
RF-Sensitive	Northern bog lemming *Synaptomys borealis sp.*	Very low = wet or riparian & softwood habitat.
RF-Sensitive	Wood turtle *Clemmys insculpta*	Very low = riparian areas and streams.

*No voucher specimen or photo documentation in NH (Yamasaki, 2000; Chenger 2002 & 2004 surveys).

**No recent documented occurrence of C.lynx in NH (USDI 1998, 2000, 2000a; WMNF surveys 1998-2004).

Other Species of Concern Wildlife for the WMNF: During the WMNF Forest Plan Revision process, several wildlife species that are not listed on the current Eastern Region 9 Regional Forester Sensitive Species list (USDA 2000) were identified as having a potential viability concern on the WMNF (USDA 2003a). These species are termed Other Species of Concern (OSC) and were reviewed for probability of occurrence in the Project Area in the Wildlife Report (located in the Project file). The Forest Service checked the NHNHB database of rare wildlife occurrences and there are no known documented occurrences of OSC wildlife within the Warren to Woodstock Snowmobile Trail Project Area (NHNHB-Cairns 2004).

Management Indicator Species (MIS): In accordance with 36 CFR 219.19(a)(1-7), the WMNF Forest Plan (USDA-LRMP 1986a, VII-B-5-9) identified wildlife MIS whose population changes are believed to indicate the effects of multi-use management activities established in the Forest Plan. The Wildlife Report (in the project file) determined 16 WMNF MIS (Table 6) have potential to occur within portions of the Warren to Woodstock Snowmobile Trail Project Area at various times of the year based on known documented occurrence and/or suitable habitat present (habitat assumed occupied).

There were few scattered signs of MIS white-tailed deer (tracks, browsing, bark scarring), but no obvious signs of core deer over-wintering areas (yards) within the proposed Warren to Woodstock Snowmobile Trail location. MIS grouse and several MIS songbirds were noted during field reviews, but there were few signs

Table 6. MIS with Potential to Occur in Warren to Woodstock Snowmobile Trail Project Area.

MIS	Habitat Associations	Habitat or Species Present in the Project Area.
Chestnut-sided warbler	N. hardwood/regeneration age class.	Habitat present, suspect could occur.
Northern goshawk	N. hardwood / mature & overmature class.	Habitat present, no nests detected during reviews.
Broad-winged hawk	Paper birch & Aspen/ mature & overmature.	Habitat present, no nests detected during reviews
Ruffed grouse	Paper birch & Aspen/ regen & all age class.	Habitat present, grouse seen during field reviews.
Snowshoe hare	Spruce & fir/regen & young age class.	Habitat present, signs seen during field reviews.
Northern junco	Pine/regeneration & young age class.	Habitat present, junco seen during field reviews.
Cape May warbler	Spruce & fir/mature & overmature classes.	Habitat present, suspect could occur.
Pine warbler	Pine/mature & overmature classes.	Habitat present, suspect could occur.
White-tailed deer	Hemlock/all ages.	Habitat present, signs seen during field reviews.
Eastern kingbird	Upland openings/grass, forb/apple trees.	Habitat present, suspect could occur.
Eastern bluebird	Upland openings/grass, forb /apple trees.	Habitat present, suspect could occur.
Mourning warbler	Upland openings/shrub ecotone	Habitat present, suspect could occur.
American marten	Mixed forest type/all ages	Habitat present, suspect could occur.
Peregrine falcon	Cliff and talus	Open forage habitat present, flyover could occur.
Canada lynx	MA 5.1, 6.1 & 6.2, 9.1	Extirpated, habitat is addressed per CLCAS.
American black duck	Wetlands and Water	Small streams present, suspect could occur.
Eastern brook trout	Permanent water bodies	Small streams, occurs in Patch & Blodgett Brooks.

of MIS snowshoe hare and no signs of MIS raptors along the proposed snowmobile trail (see Wildlife Report in Project File for complete analysis).

General Wildlife:

During recent site-specific surveys, there were ample signs of moose throughout the proposed snowmobile trail location and signs of black bear (clawed beech trees) in the northernmost portion of the snowmobile trail near Walker Brook. Also, scattered signs of coyote were noted (tracks and scat) and red squirrel were seen throughout the Project Area.

Wildlife Resources - Related Mitigation Measures

Applicable Forest Plan Standards and Guidelines and State Best Management Practices would be implemented for either alternative. See the Warren to Woodstock BE for applicable Standards and Guidelines specific to TEPS wildlife species.

Direct and Indirect Effects on Wildlife Resources

Alternative 1 - No Action

Because no snowmobile trail construction, enhancement, maintenance, or winter use activities would occur at this time, there would be no direct or indirect effects to TEPS, OSC, MIS, or general wildlife within the proposed Warren to Woodstock Snowmobile Trail Project Area.

Alternatives 2 and 3 - Proposed Action and Modified Proposed Action

Under the Proposed Action, trees of various size class (few large diameter trees) would be removed from a relatively minor amount of acres (approximately 3.4) for new trail construction. Vegetation (ranging 2-4 inches DBH) would be removed from approximately 7.1 miles of prior disturbed FS skid trails, woods roads, and the Historic Carriage Road for trail enhancement. Under the Modified Proposed Action, tree removal for new construction would occur on a greater amount of acres (approximately 9.0 acres). These potential direct effects of tree and vegetation removal and soil compaction from machinery on wildlife and their habitat during trail construction and enhancement would be localized within the proposed linear corridor of the snowmobile trail. The direct effect of noise from trial construction would most likely be heard beyond the immediate Project Area.

Indirect effects to wildlife habitat include an increase in the amount of upper open canopy conditions with an inverse decrease in closed canopy conditions. There would also be indirect effects of soil and snow compaction and an increased amount of noise and human activity in the general Project Area during winter use and trail maintenance activities.

TEPS: The Warren to Woodstock BE (in the project file) determined that the Proposed Action and Alternative 3 would cause "no effect" to Federally-listed threatened Canada lynx; and "may affect, but not likely to adversely affect" endangered Indiana bat. Due to suspected occurrence and/or suitable habitat present, the Proposed Action and Alternative 3 would cause "no impact" to Regional Forester Sensitive Species (RFSS) peregrine falcon; and "may impact, but would not likely cause a trend towards federal listing or cause a loss of viability to the population or species" of RFSS-listed Eastern small-footed myotis; Northern bog lemming; and Eastern wood turtle.

Other Species of Concern: There would be no adverse direct or indirect effects to OSC wildlife or their habitat from the No Action or action alternatives (see Wildlife Report in the project file for complete analysis).

MIS: The linear distance of the proposed Warren to Woodstock Snowmobile Trail (approximately 8.8 miles) is relatively small compared to the total area of sub-watersheds and HMUs the Project Area lies within (see Water Resource Section). Therefore, the amount of tree and vegetation removal proposed for new trail construction and enhancement, and the amount of soil and snow compaction during construction, winter use, and maintenance would cause relatively minor effects to MIS and their habitat. Some MIS such as songbirds would be displaced from the immediate proposed snowmobile trail location due to the direct and indirect effects of tree and vegetation removal and noise from trail construction, enhancement, maintenance, and winter use.

Indirect effects of trail construction, enhancement, use, and maintenance include increased human presence especially during the winter, which may cause stress and displacement of some MIS immediate from or adjacent to the proposed snowmobile trail location. Winter is a critical period for wildlife, and changes to energy balance or stress levels can affect their survival and productivity. The Warren to Woodstock Snowmobile Trail would not prevent MIS white-tailed deer, snowshoe hare, grouse, songbirds, raptors, or marten from traveling to, from, or within the Project Area or adjacent wintering and forage habitat. MIS would likely use the proposed Warren to Woodstock Snowmobile Trail for travel and/or foraging and move to adjacent habitat to avoid human contact.

Past monitoring of snowmobile operations and deer movement entitled "Snow Machine Use and Deer in Rob Brook", conducted on the WMNF indicated that deer travel patterns were not affected by periodically heavy snowmobile use (cited in Alberta Snowmobile Association, 2004). A three-year study entitled, "Response of White-Tailed Deer to Snowmobiles and Snowmobile Trails in Maine", revealed that deer consistently bedded near snowmobile trails and fed along them even when those trails were used for snowmobiling several times daily. In addition, fresh deer tracks were repeatedly observed on snowmobile trails shortly after machines had passed by, indicating that deer were not driven from the vicinity of these trails. Deer commonly used snowmobile trails as travel routes connecting deer trails. Deer sank an average of 1/10$^{th.}$ to ½ as much on snowmobile trails

compared to off trails and never approached depths which seriously impeded their mobility. Because of their continuous packed surface and excellent deer supportability, snowmobile trails greatly reduce energy expenditure of traveling deer. Since deer showed a decided tendency to move away when approached by a snowmobile in the open, and an increased tendency to stay when approached in softwood stands, the deer's response seemed to depend on its apparent security (Richens and Lavigne, 1978). Doan (1970) cited in Richens and Lavigne (1978) believed the presence of a strategically located snowmobile trail system in a deer wintering area could improve over-winter deer survival; Richens and Lavigne's study observations supported this belief. Another study (Eckstein et al. 1979 cited in Knight and Cole) found no changes in home-range size or habitat use by white-tailed deer in two Wisconsin deer yards where snowmobile activity was experimentally introduced. Snowmobiling, however, caused some deer to leave the immediate vicinity of snowmobile trails.

Another indirect effect of the proposed Warren to Woodstock Snowmobile Trail on wildlife habitat is mechanical breaking of stems at and above the snow surface during winter use. In a study in Canada (Neumann and Merriam, 1972), the effects of snowmobiles on browsing herbivores such as snowshoe hare was measured by counting numbers of plants browsed by species. The average number of browsed plants directly beside the trails in the study area was low but there was no significant relationship between browsing counts and distance from the snowmobile trails. Herbivores browsed the tips of half of the shrubs broken down by snowmobile use, but activity data for snowshoe hares indicate these browsers do avoid snowmobile trails.

MIS white-tailed deer and MIS snowshoe hare population levels are below the biological carrying capacity for their statewide range. The Project Area lies within portions of the larger NH Fish and Game Wildlife Management Units D&F (NHFG 2003). Site-specific field reviews of the Project Area noted few scattered signs of MIS white-tailed deer and MIS snowshoe hare use in portions of the proposed snowmobile trail construction and enhancement areas. Per Forest Plan Wildlife Standards and Guidelines (USDA-LRMP 1986a, VII-B-18, #4), the proposed location of the Warren to Woodstock Snowmobile Trail would avoid softwood habitat in the Blodgett Brook, Jackman Brook, and Walker Brook areas.

Based on the local and relevant wildlife studies cited, Alternatives 2 and 3 would cause a relatively minor reduction in the overall amount and quality of habitat available to MIS within the proposed Warren to Woodstock Snowmobile Trail Project Area.

General Wildlife: The same direct and indirect effects of vegetation and tree removal, soil and snow compaction, noise, and increase human presence as described for MIS would apply to general wildlife species such as moose, bear, coyote, fox, songbirds, and small mammals. Moose and bear appear to adjust quickly to human activity and would generally avoid human presence. The NH Fish and Game Department is unaware of any collisions or incidents involving

moose on snowmobile trails (see NHFG 2004 letter in project file). Black bear are generally dormant during the winter when snowmobile activity would occur, which would avoid conflict with black bear forage habitat. The snowmobile trail layout for new construction would avoid removal of mast producing beech trees, especially near Patch Hill and Walker Brook in the Project Area. Changes in snow structure conditions (temperature, density, and melting rate) caused by snowmobiles would affect or cause mortality to some organisms inhabiting subnivean environments. A snow temperature decrease of 3^0 C could increase the metabolic energy expenditure of short-tailed shrews (Randolph, 1971 cited in Neumann and Merriam, 1972). However, the proposed linear corridor of the Warren to Woodstock Snowmobile Trail is a relatively minor portion of the total land area available for subnivean and burrowing species on the WMNF.

Cumulative Effects on Wildlife Resources

The cumulative effects analysis area included the Project Area (wildlife with small home ranges), and the WMNF (TEPS, OSC, and MIS population trends and viability in the Forest-wide planning area (36 CFR 219.19)). The temporal scope included the past 3 years and reasonable future 10 years. The Warren to Woodstock BE (project file) determined there would be no cumulative effects to TEPS from the No Action or action alternatives. The No Action would cause no effects, and the action alternatives would cause relatively localized minor direct and indirect effects to the amount and quality of MIS habitat within the Project Area, but would not cause any adverse effects to population trends or viability for WMNF MIS within the forest-wide planning area (36 CFR 219.19). The No Action or action alternatives would cause no cumulative effects to general wildlife or OSC wildlife.

Scoping Comment Summary and Response – Wildlife Resources

A number of comments were submitted related to concerns for wildlife populations and habitats. Concerns about disturbance to wildlife populations using the area is addressed and conclusions supported by cited research, above. Comments included concerns related to deer wintering area are addressed above. A concern related to the viability of populations of subnivean species. As stated above, changes in snow structure conditions (temperature, density, and melting rate) caused by snowmobiles would affect or cause mortality to some organisms inhabiting subnivean environments. A snow temperature decrease of 3^0 C could increase the metabolic energy expenditure of short-tailed shrews (Randolph, 1971 cited in Neumann and Merriam, 1972). However, the proposed linear corridor of the Warren to Woodstock Snowmobile Trail is a relatively minor portion of the total land area available for subnivean and burrowing species on the WMNF. The Environmental Assessment and the Biological Evaluation disclosed the potential effects to wildlife, including wildlife that burrow in the snow and the soil. The impacts include potential injury and or mortality, but not to a substantial degree that would cause a loss of species population viability.

Comments expressed concern about the proposed trail crossing of deer wintering areas. During site-specific field reviews (including winter), few sign of deer were seen in the proposed snowmobile trail location. Also, during preliminary trail layout, the softwood component in the Blodgett Brook area was avoided per Forest Plan Standards and Guidelines that protect deer wintering areas and other sensitive habitat.

A commentor noted that the proposed trail would increase the presence of browse in the area and result in increased wildlife use of the area. Because of the narrow, linear nature of the proposed trail, neither the Proposed Action, nor the Modified Proposed Action include activities that would specifically or substantially increase browse in the area.

A commentor noted that other users of the trail may disturb bears in the fall when they are trying to put on body fat by consuming high protein beech nuts. The Warren to Woodstock Snowmobile Trail is not proposed as a multi-use trail. There may be occasional, incidental use by other visitors, but not to the degree to cause substantial displacement of bears from the Walker Brook area. A few scattered beech trees along the old road may be removed for public safety reasons, but the majority of scarred beech trees along the old road would remain and would be available to bears during the fall.

Questions were posed regarding past wildlife surveys of the area. The Biological Evaluation (BE) for the Warren to Woodstock Snowmobile Trail Project disclosed there would be "no effect" to Canada lynx, and also determined a "may affect, but not likely to adversely affect the Indiana bat". The BE also determined a "may impact, but would not likely cause a trend towards federal listing or cause a loss of viability of the population or species" of Regional Forester-listed Sensitive Species from construction, maintenance, and winter motorized use. Past fish, wildlife, and plant surveys for nearby Timber Sales in the general area have found no TEPS species, except for American ginseng located near Patch Hill. Furthermore, several years of past winter tracking, small mammal trapping, and ongoing bird monitoring along wildlife monitoring lines associated with the Project Area (Walker Brook and Lost River Transects) have detected no TEPS species.

A commentor asked for information regarding accommodations for threatened and endangered species. The USFWS rendered a Biological Opinion (BO) on the Forest Service Biological Assessment of continued implementation of the 1986 WMNF Forest Plan. The USFWS BO outlined Terms and Conditions the FS must follow for protection of Indiana bat. Also, the FS and USFWS signed a national level agreement to protect lynx habitat on federal lands. The Biological Evaluation for the Warren to Woodstock Snowmobile Trail Project incorporated the Terms and Conditions for protection of Indiana bat, and the Canada Lynx Conservation Assessment and Strategy Standards and Guidelines for conserving lynx habitat on federal lands. Also, all applicable Standards and Guidelines in the 1986 WMNF plan were incorporated into the Warren to Woodstock Snowmobile Trail Project Environmental Assessment.

A commentor noted that moose are observed along Route 118. The commentor inferred that snowmobiles would pose a safety risk to moose. A letter of the NH Trails Bureau states there are no known documented occurrences of moose / snowmobile collisions in the state to date. It is anticipated that wildlife would most likely avoid the snowmobile trail and habitat immediately adjacent to the trail during times of use.

Socio-economic Environment

Heritage Resources

Heritage Resources Affected Environment

The town of Warren initiated the proposal for a new road to Woodstock in 1887, to be built from Warren "through the pass between Mounts Cushman and Waternomee and down the valley of Moosilauke river to North Woodstock" with money appropriated by the state and additional funds raised by the towns. (Little 1893: 51) The road was 6.9 miles in length, and was intended to attract summer visitors and tourists to the area.

The Warren-Woodstock Road was constructed in 1888 and 1889, and "was built ten feet wide, from inside to inside of the ditches, and the trees and shrubs were cut out five feet more on each side." (Little 1893: 53) The road was constructed by hand, with log culverts and stringer bridges. It connected resort areas of the two towns, and provided a scenic forest drive through the unpopulated area in between. Prior to the building of the road, a blazed trail was laid out between the two towns in 1830, and in 1879, a bridle path that partly followed the old trail was cut, but the carriage road does not appear to follow the same route as either of its predecessors. (Little 1893: 49-50) Use of the carriage road appears to have diminished significantly by the 1920s. (Stiles 1920 in Averill, ed., 1999: 253) Parts of the road were incorporated into NH State Highway 118 by the Civilian Conservation Corps in 1935, while others were left to fall into disrepair and used as a footpath before becoming partially obscured by re-growth. (Nicol 1963: 23)

The portion of the Warren to Woodstock carriage road that is the proposed location for the snowmobile trail is the section of the historic road that is currently affected by isolated, minor soil erosion and tree re-growth, and is at most risk of being obscured and lost to these natural forces. The north end of the Carriage Road, which displays the most engineering in the transversal of sloped terrain, remains in good condition (sparse re-growth and little erosion), and will not be affected by the snowmobile trail.

A cultural resources survey has been conducted for the Warren to Woodstock Road (CRRR# 04-4-2), and the existing historic road was mapped in its entirety and documented in its current condition. No cellar holes or building foundations were identified in the snowmobile trail project area. Recorded historic surface

features include the profile of the historic roadbed, including boulder alignments along sides of road, and graded contour on sloping terrain.

Heritage Resources - Related Mitigation Measures

Mitigation measures for the implementation of the project will be in compliance with federal and state laws for the protection of historic resources. In addition, the following mitigation measures are specified.

- Flush cut tree stumps on remnant sections of the Warren to Woodstock Carriage Road. Avoiding ground disturbance of the historic roadbed will protect its historic integrity.
- Retain the historic width and appearance of the remnant sections of the Carriage Road. Impacts to the historic character and integrity of the roadbed will be avoided.
- Limited stump removal and associated heavy machinery use on remnant sections of the Carriage Road. Damage to the integrity of the historic roadbed will be limited.
- Retain the historic width and appearance of the remnant sections of the Carriage Road. Impacts to the historic character and integrity of the roadbed will be avoided.
- If, in the course of any project activities, previously unknown structural elements (such as culverts) or artifacts are located, activities will stop immediately in that location. The district heritage paraprofessional and Forest archaeologist will evaluate the finds and make recommendations on how to proceed. Previously unrecorded heritage resources will be protected from destruction until recorded and evaluated, and project modifications will be implemented as necessary to protect significant features.
- Historical interpretation of the road will include signs at the trail crossing of Route 118, or other locations as appropriate. Interpretation has been used successfully elsewhere as mitigation for enhancement, re-use or loss of historic structures.
- The trail will be maintained as specified in the Memorandum of Understanding (MOU) between the NH State Bureau of trails and the White Mountain National Forest. Implementation agreements may include Challenge Cost Share Agreements, participating Agreements, or Sponsored Volunteer Agreements. Implementation agreement will include a Cultural Resource Protection and Management clause to stipulate that segments of the snowmobile trail that follow the historic road will minimize ground disturbance and retain the historic character of the road. The trail will be closed when there is insufficient snow cover or ground freeze to prevent damage to the historic roadbed. By bringing awareness of the historic road to snowmobile groups and requiring sensitivity to the character and integrity of the historic

road in their maintenance and use of the snowmobile trail, the road will continue to be protected as a heritage resource.

Direct and Indirect Effects on Heritage Resources

Alternative 1: No Action

Under Alternative 1, no new federal action related to the proposed snowmobile trail will take place at this time, and there will be no change from the existing condition. Natural forces of erosion and re-growth will continue to deteriorate the integrity of the historic roadbed at the current rate. Upon appropriate analysis, subsequent management activities may occur within the Project Area.

Alternative 2: Proposed Action

The White Mountain National Forest works in consultation with the New Hampshire State Historic Preservation Office to design projects that are determined to have no effect upon cultural sites in accordance with 36 CFR 800 and The National Historic Preservation Act of 1966, as amended.

The direct effects of the proposed action are that the integrity of the historic roadbed will be protected by the above mitigation measures, future damage by erosion and re-growth will be prevented by ongoing maintenance, and the road will be restored to its historic purpose as a recreational travel way, preserving the location of the historic route.

Alternative 3: Modified Proposed Action

Under Alternative 3, no construction would take place on the historic roadbed. Natural forces of soil displacement and re-growth will continue to deteriorate the integrity of the historic roadbed at the current rate.

Cumulative Effects on Heritage Resources

The area used for the heritage resources cumulative effects analysis is the proposed Warren to Woodstock trail project area over ten years, because the potential effects of the proposed activity would be limited to the portions of the linear heritage resource within the project area.

Alternative 1: No Action

Under Alternative 1, no new federal action will take place. Erosion and re-growth will continue to deteriorate the historic roadbed at the current rate. Ultimately the

Warren to Woodstock Carriage Road will no longer be discernible; this heritage feature will not be available for on-site interpretation.

Alternative 2: Proposed Action

The segments of the historic roadbed that coincide with the proposed snowmobile trail will be protected from erosion and natural deterioration by ongoing maintenance, implemented with sensitivity to historic integrity and minimal ground disturbance. The Carriage Road will be interpreted and brought to public awareness by interpretive sign(s), and restored to its intended function as a recreational travel way.

Alternative 3: Modified Proposed Action

Under Alternative 3, erosion and re-growth will continue to deteriorate the historic roadbed. As the parallel snowmobile trail is maintained and utilized over time, it will take precedence on the landscape as the footprint of the original carriage road recedes into obscurity. Ultimately the Warren to Woodstock Carriage Road will no longer be discernible; this heritage feature will not be available for on-site interpretation.

Scoping Comment Summary and Response – Heritage Resources

Comments encouraged the development of the snowmobile trail as a way to revitalize a long-abandoned historic travelway. Comments in support of the trail state that the Proposed Action would help bring attention to the historic Carriage Road and its history. These commentors noted that restoring the historic travelway would be a public benefit.

Other commenters expressed concern for potential degradation of the Carriage Road and its "associated foundations." The Interdisciplinary Team has specified that the Proposed Action would minimize all tread disturbances and the modified Proposed Action would completely bypass the remnant portions of the Carriage Road. These alternatives provide two methods of addressing these concerns.

Professional field review along the entire trail did not locate any "associated foundations," rock abutments, rock walls or other unique remnants commonly found along other more prominent abandoned carriage roads elsewhere in New England. These features did not exist at the time of construction of the Carriage Road; there is no risk to degradation of these types of features. A commentor noted that the Carriage Road is a "rare, historic, hand-built road." In fact the entire state and region were crisscrossed by vast network of carriage roads, many that did exhibit prominent rock features. The Warren to Woodstock Carriage Road, though locally noteworthy, would not be described as a "rare" historic feature.

Other comments expressed concern about preserving the integrity of the remnant portions of the Carriage Road. The original Road is thickly reforested in most sections; the natural process of revegetation continues to obliterate the original tread. Ultimately, through natural processes the road will become completely obscured. The Proposed Action would minimize tread disturbance, and clear the tread of vegetation that has become establishment since the Road was abandoned. The Modified Proposed Action will completely bypass all remnant portions of the Carriage Road, directly addressing the concerns of those who feel the Road should be allowed to continue to revegetated.

Sound

Sound Affected Environment

The Project Area surrounds and closely parallels NH State Route 118, a public highway that links the town centers of Warren and Woodstock, New Hampshire. Visitors to the Project Area would expect to hear and see heavy tourism-related and commercial vehicle traffic year-round. Highway traffic provides the dominant

Traffic Counting Station # 495050
Route 118 at the Warren/Woodstock Town Line

1996	1997	1998	1999	2000	2001	2002	2003
*	410	*	400	*	340	*	*

* Data not available.

influence on the soundscape within the Project Area. The Average Annual Daily Traffic (AADT) on Route 118 as measured at the Warren Town line is displayed in Table 7:

State Department of Transportation statistics indicate an average daily motor vehicle traffic volume of 383 vehicles.

Sound levels measured adjacent to rural highway traffic is generally equivalent to approximately 60-70 decibels. This sound level would be anticipated as a result of the daily traffic average of 383 vehicles per day including passenger cars, motorcycles, SUV's, commercial vans and trucks traversing route 118 within the Project Area. This sound level is an estimate; the effects of sound are influenced by the surrounding surfaces (summer road surfaces vs. winter, snow-covered surfaces), vegetation type, slope, elevation, speed and size of vehicle as well as direction of travel (uphill or downhill).

To place decibels in context, the following estimates are provided for illustrative purposes:

Activity	**Approximate sound levels in decibels (dBA)**
Threshold of human hearing	0
Normal breathing	10

Rainfall	50
Normal Conversation	60-70
Vacuum Cleaner	60-85
Rural Highway Traffic	60-70
Snowmobiles at 20 miles per hour*	65-75
Flush Toilet	75-85
Power Lawnmower	65-95
Snowblower	105
Symphony, percussion section	130

*This may vary in relation to trail slope, direction of travel, engine and exhaust design, etc.

This document considers the *change* to the sound levels occurring within the Project Area, along Route 118 and adjacent lands based on the implementation of the Proposed Action and its Alternatives.

Sound Resources - Related Mitigation Measures

There are no Forest Plan Standards and Guidelines or applicable mitigation measures for sound related to snowmobiles. State and Federal standards for sound generated by snowmobiles are applicable.

Direct & Indirect Effects - Sound

Alternative 1: No Action

There would be no change to existing sound levels as a result of implementation of Alternative 1. Highway traffic would continue to be expected at an average daily volume of 383 vehicles per day generating an average perceived noise level, at 50 feet, of 60-70 decibels. Snowmobile traffic on the Glover Brook, Elbow Pond, Three Ponds and Moosilauke Carriage Road Snowmobile Trails will continue.

Alternatives 2 and 3: Proposed Action and Modified Proposed Action

Alternatives 2 and 3 implement substantially the same length of trail in substantially similar locations with regard to sound. Both alternatives closely follow the Route 118 corridor and both alternatives are expected to host similar snowmobile use levels. Based on similar location, type, season, and volume of use, this analysis considers that the direct and indirect effects of these alternatives to be generally equivalent.

Officials from the New Hampshire Trails Bureau anticipate that approximately 250 snowmobiles per week, or 36 machines per day would use the Warren to Woodstock Snowmobile Trail if implemented. In effect, the snowmobile trail will host additional motor vehicle traffic equivalent to approximately 10% of the current daily motor vehicle traffic along the Route 118 corridor. The snowmobile traffic would occur, of course, only during the winter months. The trail would be closed to ATV's or other motor vehicles throughout all non-winter months. On an annual basis, then, snowmobile traffic would constitute a 4% increase of motor vehicle traffic in the Route 118 corridor.

Bowlby and Associates' 1996 Noise Monitoring Study conducted for Grand Teton National Park provides data for production snowmobile sound propagation rates. Data in this study verifies the sound propagation rate for snowmobiles of -6 dB per doubling of distance. For instance, if a snowmobile generates 70 decibels at 50 feet, it is anticipated that it would generate 64 dB at 100 feet, 58 dB at 200 feet and 52 dB at 400 feet, etc.. Using this relationship, it is anticipated that sound within the Project Area would occur as indicated in Table 8.

Estimating the sound is also complicated by group size, speed, machine age and condition, ground cover, slope, etc. In general, doubling the number of sound sources yields an increase of three decibels. One snowmobile at 400 feet may be expected to yield 52 decibels; two snowmobiles given the same variables would be expected to yield 55 decibels; four snowmobiles would be expected to generate 58 decibels, etc.

Cumulative Effects - Sound

Alternative 1: No Action

There would be no anticipated change to existing sound levels as a result of implementation of Alternative 1.

Alternatives 2 and 3: Proposed Action and Modified Proposed Action

In both Alternatives 2 and 3, the trail locations would concentrate use in a corridor in close proximity to Route 118. For both Alternatives 2 and 3, Route 118 remains the dominant and previously existing sound component of the Project Area soundscape.

Route 118 is closer to Dartmouth College property than the trail locations analyzed in either Alternatives 2 or 3. Because of topography and trail location, it is anticipated that current highway sounds as perceived from the WMNF boundary

Point of Sound Origin	Point of Sound Reception	Distance (feet)	Sound Origin	Average Sound Level (dB) at Point of Sound Origin	Expected Average Sound Level (dB) at Reception Site	Anticipated Change as measured from Reception Point(dB)
Route 118	Route 118	On-site	Highway Traffic	60-70	60-70	Alt. 1: No Change Alt. 2: Negligible Change Alt. 3: Negligible Change
Historic Carriage Road	Historic Carriage Road	On-site	Snowmobile	65-75	65-75	Alt. 1: No Change Alt. 2: 30-35 over high way sound Alt. 3: 30-35 over high way sound
Route 118	Historic Carriage Road	Average 550*	Existing highway traffic	60-70	35-40	Alt. 1: No Change Alt. 2: No Change Alt. 3: No Change
Historic Carriage Road	Route 118	Average 550*	Snowmobile	65-75	45-55	No increase over current highway traffic
Route 118	WMNF/Dartmouth College Property Boundary	On-site	Existing highway traffic	60-70	40-50	No increase over current highway traffic
Proposed Snowmobile Trail		800	Snowmobile	65-75	41-51	Alt. 1: No Change Alt. 2: Negligible Change Alt. 3: Negligible Change
Route 118	Dartmouth Trails	2,100	Existing highway traffic	60-70	25-35	Alt. 1: No Change Alt. 2: Negligible Change Alt. 3: Negligible Change
Proposed Snowmobile Trail		4,900	Snowmobile	65-75	20-30	Alt. 1: No Change Alt. 2: Negligible Change Alt. 3: Negligible Change

* 550 feet represents the average distance between the eastern portion of the trail described in Alternatives 2 and 3 and Route 118. West of the crossing of Route 118, the distance between the trail locations and Route 118 are large enough to render sounds from snowmobiles as perceived from Route 118, to be noticeable, but negligible. The average distance in exclusive of the approach and crossing points of the two proposed trail/highway crossings.

Table 8: Sound and Perceived Changes at Points of Origin and Reception within the Project Area

with Dartmouth property or as perceived from the nearest Dartmouth trail, would be louder than sounds that would be generated by snowmobiles on the trail locations described in either Alternatives 2 or 3.

When considering any effects of sounds that would be generated by snowmobiles, it is important to note that the closest trails on the Dartmouth property are effectively screened from both Route 118 and either trail location by favorable topography as well as distance. In addition, as stated above in the Air Resource section, New EPA- mandated standards will take effect in 2006 which will result in the transition to 4-cylinder snowmobiles which are notably more quiet. The attrition of 2-cylinder engines and transition to 4-cylinder models will take as long as 10 years; over the course of the transition, the effects of sound within the Project Area will continue to be reduced. No adverse cumulative effects are anticipated as a result of the implementation of either Alternative 2 or 3.

Scoping Comment Summary and Response – Sound

Several commentors noted concern for the impacts of sound in "undisturbed" forested areas. As noted above, the proposed Warren to Woodstock Snowmobile Trail is in close proximity and roughly parallel to State Route 118 which traverses the entire length of the Project Area. Existing traffic data for Route 118 is noted above, as well as projected snowmobile traffic. Sound related to anticipated snowmobile use along the trail is expected to be higher than current levels immediately adjacent to the trail and to Route 118. Topographic features between the trail and nearby private land will significantly reduce or mitigate the sound, as perceived from Ravine Lodge, that is generated by snowmobile traffic on the proposed trail. Notably, the current location of Route 118 lies more closely to the Dartmouth Ravine Lodge and Dartmouth trails as does the proposed snowmobile trail. Because of topographic features (Blue Ridge) and distance, the sound effects, as perceived from the Ravine Lodge, of existing traffic on Route 118 is anticipated to exceed those that would be expected from snowmobile use of the proposed trail. In addition, the Dartmouth property currently hosts snowmobile traffic on the Moosilauke Carriage Road Snowmobile Trail immediately east of Ravine Lodge. This snowmobile trail is closer to the Lodge than the proposed snowmobile trail locations proposed in Alternatives 2 and 3.

Recreation

Recreation Affected Environment

Recreational settings for the Warren to Woodstock Snowmobile Trail Project Area are Semi-Primitive Motorized (MA 2.1, Forest Plan, p.III-30), Semiprimitive Nonmotorized (MA 6.2 Forest Plan, p III-51) and Roaded Natural Recreation Opportunity Spectrum (ROS) Classes (MA 3.1, Forest Plan, p.III-36) (Forest Plan, ROS, Appendix H). Primary recreation activities within the Project Area include: driving for pleasure, hiking and dispersed camping, hunting, limited fishing, and snowmobiling. Recreation use within the Project Area, except for snowmobiling, is relatively light.

Driving For Pleasure

State Route 118 is a winding, steep, narrow, state-maintained, year-round road which connects the town centers of Warren and Woodstock. There are two small viewpoints to the south near the height of land along Route 118. Each viewpoint has a small pull-off area with a capacity of three cars. Driving for pleasure is heavier in the summer and fall than in the winter months as travelers often avoid Route 118 in winter due to frost heaves, steep grades, sharp turns and the possibility of slippery conditions. (See traffic volume information in the Sound section, below.)

The only other road within the Project Area that hosts driving for pleasure is the Elbow Pond Road, Forest Road 156. The road is 1.6 miles in length and serves as access to Elbow Pond; it receives light use and is gated in the spring and fall to protect the road surface.

Trails and Hiking

There are two hiking trails within the Project Area; each receives very low use. Both trails start at the gate located approximately 200 yards from Route 118 on Forest Road 211. There is parking for 3 to 4 cars near the gate. The Hubbard Brook Trail separates from the road at 1/2 mile and then continues east for about 1¾ miles ending at the Hubbard Brook Road NFSR 22. The Three Ponds Trail starts in the same location as the Hubbard Brook Trail and is collocated on NFSR 111 and NFSR 110 for 2.1 miles. From the end of NFSR 211, the trail continues south to the Stinson Lake Road in Rumney. There is more use on the Stinson Lake side to Three Ponds.

Dispersed Camping

Camping is permitted along NFSR 156, however there are few suitable locations. Campers are required to display a White Mountain National Forest Parking Pass to park and/or camp.

The two trails described above receive low use; hikers rarely camp along these trails. There is some camping in the vicinity of Three Ponds and at the Three Ponds Shelter but most of these visitors access the area from the Rumney area via the Three Ponds Trail. Most of the hiking and camping use occurs in non-winter months.

Hunting

The Project Area lies within the New Hampshire Wildlife Management Units D and F. The Area receives moderate moose, deer and bear hunting pressure according to local knowledge, direct observations, and personal communication (personal communication Assistant District Ranger Art Gigiliello with District Biologist Weloth). Hunting pressure in this area varies directly with previous timber management activities, specifically regeneration (clear cutting) of the aspen-paper birch type and northern hardwood type, the favored browse for moose and deer. Lower levels of use of the Project Area are associated with small game hunting.

There is moderate watchable wildlife use in summer and fall.

Fishing

Fishing activity is moderate at Elbow Pond (located outside of the Project Area). Stream and river fishing is very limited due to the limited number of fishable steams in the area.

Snowmobiling

There are two existing snowmobile trails adjacent to the Project Area; the Elbow Pond Snowmobile Trail to the northeast and the Three Ponds Trail to the southwest of the Project Area. The Hubbard Brook Trail accesses the Hubbard Brook Experimental Forest from the west, however this trail is closed to snowmobile use due to the ongoing research being conducted in the area.

Recreation – Related Mitigation Measures

In addition to the generally applicable Forest and Management area-wide Standards and Guidelines listed in the Forest Plan, the following specific mitigation or coordination measures would be used in implementing the proposed activities:

- National Forest System Roads or segments thereof may be needed for management activities, including vegetation management, in the winter; concurrent snowmobile use may be impacted. Specific mitigation measures addressing "dual use" would be determined through the project specific analysis at the time of the subsequent project's proposal and analysis. Accommodations could include widening the road to allow snowmobile use adjacent to the current road surface, by-passing the road with a trail parallel to the road, seasonal closures, scheduled daily closures, or a combination of these measures. It is likely that use of this road for vegetation management would be limited to one operating season or less; it is unlikely that timber sale activity would utilize the road for more than one year. In all cases, the appropriate time to determine the type and timing of mitigation measures would be during the analysis of any subsequent proposed vegetation management.
- Existing gates may be closed in non-winter months to preclude unauthorized road and trail use. Additional gates may be installed and closed, as warranted by non-winter use.
- Signing would be used to preclude other motorized use from the proposed trail.
- Speed limit signs would be posted along the trail to control speed.
- Caution, stop, and crossing signs would be posted at road crossings.
- Caution signs would be posted to inform users of situations along the trail where extra attention is warranted including the recurring presence of wildlife, including moose.

- The trail would be open for winter motorized use only, and signed as closed to all other motorized uses.
- Snowmobile traffic control signs at road crossings will be removed during non-winter months.

Direct and Indirect Effects on Recreation

Alternative 1 - No Action

No activities would be implemented as a result of the implementation of Alternative 1. There is no known current or anticipated use of the remnant sections of the Carriage Road if Alternative 1 would be implemented.

No direct or indirect effects to the recreational experiences of visitors are anticipated as a result of this alternative.

Alternatives 2 and 3 - Proposed Action and Modified Proposed Action

Alternatives 2 and 3 would provide an 8.8 mile snowmobile trail connecting two existing snowmobile trails, providing opportunities for Semi-primitive Motorized and Roaded Natural recreation. It is estimated that approximately 250 snowmobiles per week will utilize the trail. (New Hampshire Department of Resources and Economic Development, Bureau of Trails, May 21, 2004).

These action alternatives would construct a winter motorized use trail in an 850 foot long and 25 foot wide corridor north of Route 118 in an area designated in the Forest Plan for Semiprimitive Nonmotorized recreation. Implementation of these alternatives would establish a seasonal motorized use and would require a site-specific Forest Plan amendment in the 0.4 acres of MA 6.2 lands through which the trail passes.

The MA 6.2 through which the proposed trail passes is currently bisected by State Route 118, also a non-conforming use of this management area. When designating management areas in the Forest Plan, site-specific accommodations were not made for obvious non-conforming uses including long and well-established travelways. State Route 118 is a permanent land feature that is a non-conforming use of MA 6.2; the Forest Plan passively accommodates this non-conforming use.

Both action alternatives would construct the trail in an area that crosses:

- the most narrow section of MA 6.2 lands
- in a path in close proximity and parallel to State Route 118 corridor.

Alternative 2 would construct the trail in the location of the remnant portion of the Carriage Road, a previously existing landscape feature and travelway, in the MA 6.2. Alternative 3 would construct the trail parallel to the remnant portion of the

Carriage Road in the MA 6.2. Both would yield positive effects to the existing network of snowmobile trails available to snowmobile users. There is no known winter use of the Carriage Road by winter hikers or cross country skiers; these user groups would not be adversely affected by the construction of the trail.

Within these parameters, there would be no adverse effects on recreation as a result of implementation of Alternative 2 or 3 and the associated site-specific Forest Plan amendment for this use. Route 118 currently bisects the MA 6.2; establishing a snowmobile trail on this section of the Warren to Woodstock Carriage Road does not fragment an expansive area of solitude, rather it concentrates use and disturbance to a narrow corridor close to Route 118.

The action alternatives would provide interpretive signing related to the construction, use, and subsequent abandonment of the Carriage Road.

Alternatives 2 and 3 would likely host minor non-winter use of the proposed trail including hunting and viewing watchable wildlife.

Alternative 2 would provide for the long-term, sustained maintenance and interpretation of the remnant portions of the Carriage Road

Although Alternative 3 would provide interpretive signing for the remnant portions of the Carriage Road, this alternative would not provide maintenance for these sections; recreation use of these non-maintained sections would be virtually nonexistent. The Carriage Road would eventually become impossible to discern as vegetation continues to reclaim the original road.

Cumulative Effects on Recreation

The cumulative effects area was determined to be the Wentworth-Warren and Moosilauke Brook watersheds. These watersheds contain connection trails to other snowmobile trails that form the state-wide network of snowmobile trails. The cumulative effects analysis period is the past ten years and next ten years because this takes into account the history of public requests for this proposal, recent timber sale and road maintenance, as well as planned management activities within the cumulative effects area.

Alternative 1 - No Action

The cumulative effect of implementation of Alternative 1 include the continuation of a limited spectrum of recreation opportunities, particularly winter opportunities, within the Project Area and this section of the WMNF. Upon completion of appropriate analysis, other management activities may occur within the Project Area.

Alternatives 2 and 3 – Proposed Action and Modified Proposed Action

Alternatives 2 and 3 would have positive cumulative effects on recreation in the MA 2.1 and MA 3.1 lands by broadening the spectrum of recreation opportunities available to Forest visitors, meeting the desired condition for these MAs. Construction of the trail would provide a snowmobile connection between the Glover Brook and Three Ponds Snowmobile Trails. The trail would provide a more consistently reliable connection for snowmobile traffic than currently provided by the I-93 snowmobile trail corridor. This complementary snowmobile route would strengthen the state-wide network of snowmobile trails by providing an alternate route in the event of insufficient snowfall, reactivated winter railroad use, etc. In addition, the trail would improve snowmobiler safety by dispersing the existing concentration of snowmobilers over a wider network of trails.

Scoping Comment Summary and Response – Recreation

Numerous comments were received which expressed support for the Proposed Action in response to the need for a complementary route to the railbed corridor as well as for the localized benefit to the economic activity in the Warren area. Many snowmobilers expressed frustration that this long-requested and broadly supported project had not implemented. Others expressed support for the project's objective to broaden the spectrum of recreation opportunities in this portion of the WMNF.

One commentor challenged the definition of "roadless" within the context of roadless area designation in the RARE II process. The designation of roadless areas, identification of roadless area boundaries, and re-examining the Forest Service description of "roadless" is beyond the scope of this document. The proposed trail crosses a small protrusion at the southern end of the Jobildunk Inventoried Roadless Area. Re-evaluating this Roadless Area boundary or re-addressing the definition of "roadless" is not within the decision space of this project analysis. With regard to the proposed crossing of the Jobildunk Roadless Area's southern protrusion, several commentors noted that this protrusion is very small and extremely narrow and of low significance. It is understood that the original configuration of this portion of the Roadless Area was likely based on an subjective elevation locator rather than a more well-substantiated resource-based delineation.

A commenting organization noted that while the group does not generally support changed use within a Roadless Area, however, given the specific details of the proposed project (location of trail, proximity to Route 118, width of MA 6.2 corridor, etc.), the group offered its qualified support.

A representative comment claimed that the Proposed Action would negatively alter the character of the area. "What is now a quiet area without motorized

recreation would experience all the noise, danger, odor etc. of snowmobile trail use." The entire length of the Proposed Action and the modified Proposed Action are within sound and/or sight distance of Route 118 which is traversed by nearly 400 vehicles per day. The Project Area does not exhibit the qualities of a pristine, undisturbed area. In fact, the Interdisciplinary Team considered the location of the proposed trail in close proximity to Route 118 as an important and preferred concentration of use in an area currently impacted by significant motorized use. Other commentors noted that the proposed trail's location adjacent to Route 118 was a prudent option favoring the concentration of developed recreation opportunities. Noteworthy, the Project Area contains other snowmobile trails to the north and to the south as well as an existing snowmobile crossing of Route 118 and traversing the adjacent Dartmouth property.

Concerns were expressed that development of a motorized winter recreation opportunity is not a suitable use of this portion of the WMNF. The WMNF is allocated to Management Areas, each with an array of management objectives. A Desired Condition is specified for each MA; development of a broad spectrum of recreation opportunities, including motorized use, is specified for the MAs 2.1 and 3.1 which constitute the entire Project Area with the exception of the approximately 850-foot corridor of MA 6.2. Concerns about motorized recreation use in the MA 6.2 are somewhat mollified by the existing presence of Route 118 and its related traffic within this MA; the State highway is a currently non-conforming use bisecting the MA 6.2. The proposed trail location is closely parallel to the existing highway in this section. Its location concentrates any effects of motorized use in the small common corridor shared by the proposed trail and the highway where it bisects the MA 6.2

Other commentors requested that the Warren to Woodstock Snowmobile Trail Project decision be deferred until completion of the WMNF Plan Revision. The 1986 Forest Plan remains in effect until the release of the Plan Revision Record of Decision, expected late in 2005. Until that time all management activities on the WMNF fall under the direction of the existing Plan. It is the intention of governing legislation, the National Forest Management Act, that Forest Plan implementation would continue prior to the release of a Forest's Plan Revision. Planning and analysis for the Warren to Woodstock Snowmobile Trail Project, as with other projects across the Forest, is progressing under the current Forest Plan direction. Modification that may be specified in the Forest Plan Revision will be implemented upon completion of the Revision and the signing of its Record of Decision.

Another comment indicated concern for the proposed trail's proximity to the Hubbard Brook Experimental Forest. Neither of the action alternatives consider or propose any new snowmobile trail construction or new snowmobile use within the Experimental Forest. Snowmobile use is currently permitted within the Experimental Forest with entry restricted to the Mirror Lake end of the Hubbard Brook Road. Snowmobile use elsewhere on the Hubbard Brook Trail or Kineo Trail is prohibited due to ongoing research adjacent to those trails. The limited access (single entry point) to the Experimental Forest has kept the snowmobile

use at an acceptable level. The Proposed Action and Modified Proposed Action do not propose an additional entry points into the Experimental Forest. If illegal and/or unacceptable snowmobile use occurs anywhere within the Experimental Forest, Forest officials may curtail all snowmobile use within the Hubbard Brook Experimental Forest. It should be kept in mind that snowmobile trails are groomed in order to maintain passage in deep snow. It is highly improbable that a snowmobile would be capable of leaving the groomed trail surface and traveling cross-country across steep, un-groomed areas, such as the Hubbard Brook Experimental Forest. Entry into the Experimental Forest from the proposed trail would not be allowed and is not considered feasible given the terrain and snow conditions in the area.

One commenting organization noted that while its members do not typically support motorized recreation development in an inventoried roadless area, that this trail's location along a previously established travelway (Carriage Road) and adjacent to an existing motorized corridor (Route 118) warranted the group's support as an appropriate location and use of this corridor.

Several commentors expressed concern for the safety of snowshoers, hikers, or cross-country skiers concurrently using the trail. This concurrent use of snowmobile trails occurs throughout the WMNF. The NH Off Road Vehicles Laws Digest states that riders must "Yield to pedestrians, horseback riders and other trail users." Proper and legal use of snowmobiles provides these requirements for safe conditions for other trail users.

A commentor requested that the State Bureau of Trails provide the Forest Service with a state-wide comprehensive management plan for current and future snowmobile plans. This comment is noted; the development of a NH Bureau of Trails state-wide comprehensive snowmobile trail management plan is beyond the scope of the Warren to Woodstock Snowmobile Trail Project.

A commentor noted concern for the potential for litter to be left behind by snowmobilers. The WMNF hosts several million visitors annually in a variety of recreation settings including wilderness, backcountry, dispersed recreation sites and developed recreation sites including alpine and cross country ski areas as well as heavily travels state highways and the Kancamagus Highway National Scenic Byway. In all areas, forest litter is unacceptable and constitutes an illegal activity. There is no indication that users of the Warren to Woodstock snowmobile trail would be more or less likely to leave litter on Forest lands. Users of the proposed trail would be subject to the same standards of law enforcement as all other Forest users. The Forest Service will continue its conservation education efforts with all forest users to teach exemplary wildland ethics, including proper disposal of trash and refuse.

Visual Quality

Visual Affected Environment

The Warren to Woodstock Snowmobile Trail Project Area is a forested landscape typical of mid-elevation forested lands on the White Mountain National Forest.

The Project Area is characterized by scattered softwood and mixed hardwood stands in a landscape that is dominated by hardwood vegetation.

Visual - Related Mitigation Measures

There are no mitigation measured required other than the generally applicable Forest-wide and Management Area Standards and Guidelines listed in the Forest Plan (§III and Appendix VII-I, pp. 1-5), visual management system mitigation measures and Best Management Practices

Mitigation measures for all new construction, enhancement and clearing include:

- Cut and fill slopes will be no steeper than 1.5 to 1.
- Rocks will be dispersed along the trail; rocks will not be left leaning against existing trees or in a position from which they can roll.
- Cut trees and vegetation will be lopped and made to lay no higher than 36 inches above the ground.
- Stumps will be placed root side down in ground depressions so they are naturally appearing.
- Equipment operators will use care not to skin residual trees.
- Snowmobile traffic control signs located at road crossings will be removed in non-winter months.

Direct and Indirect Effects on Visuals

Alternative 1: No Action

No change to the appearance of the landscape would occur under Alternative 1; there would be little or no change in the visual environment from that which currently exists within the Project Area. Any changes in the existing forested landscape would result from natural causes or separate and subsequent management decisions.

Alternatives 2 - Proposed Action

The installation of drainage structures on the existing roads and skid trails will have a negligible visual impact on the area. Clearing the remnant sections of the Carriage Road will also have minimal impact because the larger existing trees adjacent to these sections will shield the trail from view. New construction will in general have the greatest potential of being seen, however there are no vantage points to view the trail. Two potential vantage points south of the trail are Mt. Cushman, elevation 3,221 feet and Green Mountain, elevation 2,762. Both are tree covered; there are no trails to the top of these hills. With the exception of the locations where the original Carriage Road crosses Route 118 there are no vantage points from which to view the proposed trail.

Users of the trail will be able to see glimpses of short sections of the trail, however, the serpentine route of the trail and the rolling terrain through the trees will afford

few vistas. Even the cut and fill sections along the proposed new construction sections will be screened by dense stems of surrounding trees. Vistas may be considered in conjunction with future vegetative management analyses in the form of permanent openings, or temporary openings, such as group selections and clear cuts strategically placed along the proposed trail.

Alternatives 3 - Modified Proposed Action

This alternative includes more new construction but the effects of this alternative will vary little from the effects associated with Alternative 2. There will be more chances of glimpses of the surrounding terrain by users of the trail due to the greater amount of clearing associated with additional new construction included in Alternative 3.

Cumulative Effects on Visual Resources

Because of the narrow and serpentine nature of the trail and the relatively small number of trees to be cut, there are no anticipated cumulative effects on visual resources from the implementation of any of the alternatives analyzed.

Scoping Comment Summary and Response – Visual Resources

A commentor expressed concern for potential adverse effects of snowmobile signs to scenery where the snowmobile trail would cross Route 118. The State Bureau of Trails specifies standard signage at snowmobile trail crossings. These signs would be similar to those that currently exist in the north end of the Project Area where the Glover Brook and Elbow Pond Snowmobile Trails cross Route 118. Required mitigation measures include the removal of all Warren to Woodstock Snowmobile Trail signs along Route 118 during non-winter months.

Community, Environmental Justice, & Economics

Community, Environmental Justice, & Economics Affected Environment

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The Warren to Woodstock Snowmobile Project Area is located on federal lands in portions of the towns of Warren and Woodstock in Grafton County, NH. (Map 1).

Warren: The Town of Warren, population 873, was chartered in 1763 and encompasses the western portion of the Project Area. The town common and town offices are located in the shadow of 4,802-foot Mount Moosilauke, which lies north of the Project Area. The Town of Warren houses a state fish hatchery, has extensive snowmobile and hiking trails, and hosts 70-foot Redstone Missile, an expired NASA missile, in the center of the Town Common.

Warren is one of 55 New Hampshire communities with population under 1,000. The median age is 37.9, with 24.5 percent of the population under the age of 18 and 13.2 percent age 65 and older. The total number of households is 355, with an average size of 2.5 persons. Of those, 228 are family households, with an average size of 3.0 persons. As of April 1, 2000, there were 499 total housing units. Warren's population density in 2002 was 18.2 persons per square mile of land area. Warren contains 48.6 square miles of land area and 0.4 square miles of inland water area.

There are several private residences within a mile of the Project Area within the Town of Warren. Each has been notified of the Project through notification sent to the addresses available through the Warren town offices.

Woodstock: The Town of Woodstock, population 1,139, was chartered in 1763 and surrounds the eastern portion of the Project Area. From 1990 to 2000, population in Woodstock decreased by 2.4 percent, losing 28 residents for a total of 1,139. It is one of 24 New Hampshire communities to have lost population since the last census.

The median age in the Town of Woodstock is 37.1, with 23.8 percent of the population under the age of 18 and 10.3 percent age 65 and older. The total number of households is 500, with an average size of 2.3 persons. Of those, 279 are family households, with an average size of 2.9 persons. As of April 1, 2000, there were 1,279 total housing units. The population density in 2002 was 19.7 persons per square mile of land area. Woodstock contains 58.5 square miles of land area and 0.5 square miles of inland water area.

There are no private residences within a mile of the Project Area within the Town of Woodstock.

Community, Environmental Justice, & Economics - Related Mitigation Measures

There are no mitigation measures required other than the generally applicable Forest-wide and Management Area Standards and Guidelines listed in the Forest Plan and State Best Management Practices

Community, Environmental Justice, & Economics - Direct and Indirect Effects

Environmental Justice: Public participation for the Warren to Woodstock Snowmobile Trail planning have included all known interested parties as contacted via public meeting, user groups, scoping notices, town office records, and the WMNF public participation database. The general public, including all potentially affected nearby residents or landowners, have had an opportunity to participate in this environmental analysis through scoping and through the release of this comment document.

Economics: Regardless of the outcome of an environmental analysis, there are a set of baseline costs associated with the consideration of this proposal on White Mountain National Forest lands. The environmental analysis required by the National Environmental Policy Act is one component of the planning effort that

may result in project implementation. Planning activities include: biological surveys; trail layout; data collection and analysis; planning meetings; public involvement; and preparation of an environmental assessment and decision documents.

Table 9 displays the direct economic activity related to the design, analysis, and construction of each of the alternatives considered in this EA. Notably, the costs associated with preliminary planning and this analysis are fixed costs regardless of the decision reached.

Alternative 1 - No Action

The No Action Alternative, although no construction would occur, incurs the analysis costs displayed in Table 9.

Alternatives 2 and 3 - Proposed Action and Modified Proposed Action

The Trail will be constructed under the direct administrative and supervision of Forest Service contract administrators. It is anticipated, however, that snowmobile user groups, clubs, and associations, as well as the State of New Hampshire Bureau of Trails would incur the preponderance of the financial cost of construction

Table 9: Estimated Cost for Design, Analysis, and Construction of Warren to Woodstock Snowmobile Trail Project.

Activity	Estimated Cost ($)		
	Alt. 1	Alt. 2	Alt. 3
Planning (preliminary design, environmental analysis, NEPA)	42,605	42,605	42,605
Project Preparation (trail design and layout)	0	14,805	14,805
Contract Administration (contract inspection, administration)	0	17,400	17,400
Trail Construction (bridge construction, trail tread enhancement, interpretive signing)			
Equipment	0	60,000	76,800
Labor	0	40,000	65,500
Materials	0	75,000	75,000
Total Estimated Cost to Analyze, Administer, and Construct the Warren to Woodstock Snowmobile Trail	$ 42,605	$249,810	$292,110

of the trail. Materials and equipment expenditures would contribute a direct economic benefit to local economies during the construction phase of the Project.

As indicated in the Vegetation section, above, there will be trees harvested along the trail that are of some limited commercial value. The cost of removal along the proposed long, narrow, serpentine trail as well as requirements for minimized ground and tread disturbance, when balanced with the small number and diameter of trees, renders their removal not economically viable. There will be no direct economic benefit realized from the harvest and removal of isolated merchantable trees along the proposed trail.

Construction of snowmobile trails throughout New Hampshire is often accomplished through volunteer efforts of local clubs and associations. These volunteer services would significantly reduce the direct and indirect economic benefits associated with the labor-related costs of construction. If sufficient federal, state or private construction funding becomes available, however, it is anticipated that construction labor contracts would be awarded to local labor pools and result in direct payroll benefits to the local economy as displayed below. The level of direct economic benefit is directly dependant on the level of funding and contracting as opposed to volunteer efforts expended by local clubs. Any construction contracting would be awarded by the State through an open and competitive bid process.

The higher costs of Alternative 3, as compared with Alternative 2, are attributable to the costs associated with the sections of new trail that would be constructed parallel to the remnant sections of the Carriage Road.

Indirect economic effects on the local economy are anticipated to be negligible. There will be some additional retail and service commerce related to the trail, however it is anticipated that this will be primarily displaced effects rather than the creation of new economic activity.

Cumulative Effects on Community, Environmental Justice, & Economics

Grafton County is a rural county and is the second largest county geographically, in the state with 1,716.5 square miles or 1.1 million acres. Ninety percent of the landscape is timberland. Grafton County covers nearly one-fifth of the state. The population of Grafton County is estimated at 77,100 with a population density of 44.9 persons per square mile. Twenty-one of the towns in Grafton County have less than 1,000 people and one-third of the land is owned by either the state or federal government. Grafton County, due in part to its position in the Appalachian Mountain Range, hosts winter sports as important local, state, and regional attractions. Cannon Mountain, Loon Mountain, Waterville Valley and Tenney Mountain host thousands of snow-boarders, alpine and Nordic skiers. There is a large network of snowmobile trails throughout the area. Summer visitors focus on the extensive hiking trails, camping opportunities, and sightseeing.

According to the American Council of Snowmobile Associations, there are approximately 55,300 snowmobiles registered in the state of New Hampshire. Plymouth State University and the Institute for New Hampshire Studies completed

a study of snowmobilers' spending for the New Hampshire Snowmobile Association. The study notes that in the winter of 2003, the impact on New Hampshire's economy by snowmobilers was nearly $1.2 billion, or more than 1% of the gross state product and more than 10% of all travel spending in the state. In 1995-1996, a similar study and determined that $363 million was generated for the state's economy in direct and indirect spending. This increase of 60% in economic activity over a 10-year time period, is noteworthy.

Average spending per visitor per day in New Hampshire was $67.07 per resident and $88.30 from non-residents. In addition to spending on their trips, each snowmobiler spends $1,830.00 annually on equipment, clothing, club membership, insurance, and state license fees.

Other economic activities which occur as an indirect effect of snowmobile use include accommodations, ground transportation, restaurant and food services, retail shopping, and other activities. These studies attribute 8,099 direct and direct jobs within the state to snowmobiling.

A substantial segment of snowmobile-related spending is collected by the state in the form of state tax; approximately 8.6 cents of every dollar spent by a snowmobiler in New Hampshire is collected by the state via taxes on lodging, restaurants, foods, gasoline, business profits, registrations, and fees paid to the State Bureau of Trails.

Alternative 1 - No Action

Alternative 1, the No Action Alternative, would result in no cumulative effects with regard to community, environmental justice or economics.

Local snowmobile users and clubs have been requesting, advocating for and anticipating for over 10 years the addition of this trail to the state-wide snowmobile trail network. These groups would perceive the implementation of this alternative as an adverse decision and constraint on their activities.

Alternatives 2 and 3 provide for fair treatment of all people regardless of race, color, national origin, or income. There are no known cumulative effects to environmental justice as a result of the implementation of either action alternative.

Alternatives 2 and 3 – Proposed Action and Modified Proposed Action

Environmental Justice: Alternatives 2 and 3 provide for fair treatment of all people regardless of race, color, national origin, or income. There are no known cumulative effects to environmental justice as a result of the implementation of either action alternative.

Economics: It is anticipated that the Proposed Action or its action alternative would have no cumulative effect on the economic profile of or related to snowmobile use in the State of New Hampshire. Rather, it is anticipated that the preponderance of use of the trail locations considered in Alternatives 2 and 3 would be as an alternate route to the I-93 railbed corridor.

Alternatives 2 and 3 would provide a forested snowmobile trail setting that is more conducive to snowmobile use, well shaded, and with significantly improved snow conditions as compared with the railbed corridor. While any use displaced from other snowmobile trails may have some highly localized economic benefits, viewed state-wide, little or no additional snowmobile use is anticipated as a result of the Proposed Action or its action alternative. Local snowmobile users have long claimed that the proposed trail will provide significant economic benefit to the town of Warren. Based upon State Bureau of Trail indications, the preponderance of use of the trail will be use displaced from the I-93 corridor. While viewed from the most highly localized perspectives, there may be a small economic benefit to small service providers in Warren, particularly gas and food retail sales. Viewed regionally, however, the long term economic effects attributable to these action alternatives are anticipated to be negligible.

Subsequent projects and management activities in the area of the proposed trail may generate user conflicts where the proposed trail utilizes existing roads and skid trails. In this instance, as in other similar circumstances on the WMNF, accommodations would be considered and implemented appropriately. Should use conflicts arise that require restriction of season of use for timber sale or other revenue-generating activity, the bid price paid for forest products may be commensurately reduced in order accommodate these restrictions. It is anticipated that this effect would be negligible in context of the economic value of the resources in the Project Area.

Scoping Comment Summary and Response – Community, Environmental Justice, & Economics

A commentor expressed concern for the cost of the proposed trail planning and construction. Planning and analysis costs, as estimated above, have been and will continue to be borne by the White Mountain National Forest. These costs are program funds that cover the cost of employee salaries, printing and mailing costs, etc. A decision which selects an action alternative allows for the construction of the snowmobile trail in the specific location and under the specific conditions described in this analysis. A decision reached as a result of this analysis would in no way obligate the Forest Service to build or fund the construction of the Warren to Woodstock Snowmobile Trail. Rather, the selection of an action alternative would merely allow for the trail's construction and specify the trail's location and the conditions of its construction.

Funding for the trail construction would be provided by a variety of funding sources including State, local, and donated funds, materials, labor, equipment and supplies. Funds may be provided by the Forest Service.

The WMNF and the State of NH Bureau of Trails, along with local clubs, have a long-standing Memorandum Of Understanding (MOU) to maintain designated snowmobile trails on the Forest. This trail would be constructed and maintained by the State and local clubs under this agreement. The State Bureau of Trails and clubs, under the guidance of the MOU, have done an excellent job of providing a network of well maintained, groomed and safe snowmobile trails on the WMNF. It is anticipated that this mutually beneficial partnership will continue to effectively and efficiently provide both resource protection and safe, motorized over snow recreation opportunities.

A commentor requested that the Forest Service prepare an Environmental Impact Statement for the Warren to Woodstock Snowmobile Trail Project. The Forest Supervisor will make a decision regarding the appropriate documentation based on the issues and the preliminary analysis presented in this document. If significant, unresolved issues are anticipated as a result of the implementation of the proposed action, the Forest Supervisor will make the determination to prepare an Environmental Impact Statement for the project.

A number of commentors offered non-specific support for the management of the WMNF in general, this trail, and Forest employees' efforts to manage a complex resource base for multiple, simultaneous objectives. Another set of commentors offered general, negative feedback regarding the proposed project.

Endnotes

Scoping Comments

Below is an overview of the comments received in response to the Warren to Woodstock Snowmobile Trail Project Scoping Report. Comments are mixed; roughly equally divided between those that indicate support for the proposed project and those that are opposed to the proposed project. Some comments include overall support for snowmobile use as a recreational activity; others express objection to snowmobile use in general and present arguments against its value on National Forest lands. Others express question the need for the trail as well as concerns related to the environmental, social, and planning aspects of the Proposed Action.

Several comments request the development of an additional action alternative to the Proposed Action; three alternatives were developed in response to these requests. Of these, Alternative 3 was analyzed in detail.

Other comments are beyond the scope of this analysis. For example, comments and questions regarding agency policy and definitions cannot be addressed in project-level planning. One commentor asks that the Forest Service review and modify its definition of a "Roadless Area". While this inquiry may have merit, it is beyond the scope of project-level planning and will not be considered in this analysis.

Heritage Resources

There is a diversity of opinion regarding the use of the Warren to Woodstock Carriage Road for portions of the route for the proposed snowmobile trail. Some feel that the snowmobile trail offers a unique opportunity to interpret the historic Carriage Road and to reclaim it from revegetation and ultimate obscurity. Others feel that the remnants of the Carriage Road should be protected as they exist today or allowed to revegetate naturally. Two action alternatives address these concerns; Alternative 2 would enhance and protect the Carriage Road by removing encroaching vegetation and minimizing tread disturbance and Alternative 3 would construct the trail parallel to remnants portions of the Carriage Road, leaving the tread to naturally revegetate. Both action alternatives provide for interpretive signing. See Table 1, Comparison of Alternatives by Activity, Forest Plan Direction, Need and Desired Condition.

Sound and Air Quality

Many commentors ask that analysis thoroughly explore the effects of the trail on sound and air quality and that both methodology and effects be displayed in the NEPA documentation.

Wildlife

Comments related to wildlife resources included requests for analysis of the potential effects of the Proposed Action on TES species and descriptions of past TES surveys, monitoring, and proposed mitigation measures.

A commentor expressed concern that the Walker Brook area showed concentrated use by black bear in 1999 and suggested if the trail includes multi-use recreation it would cause disturbance to foraging bears in the fall. The commentor also expresses concern that deer historically wintered south of Route 118 and traveled in the Walker Brook area, and historically wintered in the vicinity of Blodgett Brook. The commentor noted the Old Carriage Road in segment 3 skirts across the softwood cover associated with Jackman Brook. During a field visit in the fall, there was some evidence of deer wintering sign along this portion of the Old Carriage Road. The commentor recommended avoiding active deer wintering areas per WMNF Forest Plan Standard and Guidelines.

Other comments suggest that the snowmobile trail would pose potential conflicts between moose and snowmobiles and cars along NH State Route 118. A comment requested analysis of the effects of the trail on subnivean species which occur between the ground surface and the bottom of the winter snowpack.

Recreation and Access

Commentors in support of the proposed action noted that the proposed route provides economic benefits to the local communities of Warren and Woodstock. Others noted the need for the connector trail as the continued snowmobile use of the railbed corridor adjacent to Interstate 93 is problematic; this route is subject to weather-related winter closure. Some commentors noted that the proposed project's location in close proximity to Route 118 would help minimize the trail's environmental and social effects.

Questions were posed regarding the agency's establishment of need for the trail as well as the availability of funding for the trail's construction and on-going maintenance. Some commentors noted that the existing railbed corridor provides adequate trail connections. Projections of trail use were requested by several commentors.

Comments expressed concern for the safety of the two trail crossings of Route 118 and asked that all alternatives be explored to avoid this safety concern. Two alternatives were identified to address these concerns. Neither were analyzed in detail because of each alternative's respective inherent safety and resource concerns.

Concerns were expressed regarding protecting the Hubbard Brook Experimental Forest and limiting potential illegal snowmobile and ATV traffic in the Experimental Forest as well as along the trail. Several commentors inquired about the availability of funding of law enforcement personnel to eliminate any illegal ATV use of the area. A commentor inquired as to the trail's effects on future timber sale haul routes.

Forest Planning, Land Allocations

Approximately 5% of the comments received expressed reservation about the proposed site-specific non-significant amendment to the Forest Plan to traverse the corridor of MA 6.2 lands. Several commentors suggest that the Forest Plan should not be amended or that the decision should be deferred until the Forest Plan Revision is complete.

Concerns were expressed regarding motorized trails across the section of the Jobildunk RARE 2 Roadless Area.

Several commentors expressed the opinion that the project and its effects warrant the preparation of an Environmental Impact Statement. The decision maker, upon reviewing this completed analysis, will make that determination and record his/her rationale in the Decision Notice for the Warren to Woodstock Snowmobile Trail Project.

List of Scoping Commentors

The following individuals and groups provided comments to the Warren to Woodstock Snowmobile Trail Project Scoping Report. A complete report of comments is available in the project files.

Name	Affiliation	City	State
Baird, Iris		Lancaster	NH
Diehl, Charles		Weston	MA
Lavigne, Fred		Center Sandwich	NH
Miller, Robert		Southwick	MA
Chandler, Gene	State of NH, House of Rep.	Concord	NH
Richardson, Robert		Walpole	NH
Macilvan, Vincent		Westport	CN
Gable, Joan			
Beij, Pierce		Ashland	NH
Burton, Raymond	State of NH, Executive Councilor	Woodville	NH
Linell, Thomas		Hanover	NH
Kellogg, Charles			
Kimball, Chip & Susan		Center Sandwich	NH
Bailey, Betty Lou		Schenectady	NY
Healey, Ed		Rumney	NH
Wright, Dean	NH Dept. of Transportation	Lincoln	NH
Corrigan, Wilma		Jefferson	NH
Clancey, Dan		Warren	NH
Lunetta, Vincent		Bethlehem	NH

Name	Affiliation	City	State
Weiss, Daniel		Burlington	VT
Casassa, Bruce		Seabrook	NH
Muller, Lene		Montpelier	VT
Greenwood, Sue			
Manganiello, Paul			
Richardson, Pete		Norwich	VT
Budell, Tim		Milton	VT
Haselton, George		Westmoreland	NH
Giuda, Bob	NH State Representative	Warren	NH
Letendre, Michael		Portsmouth	NH
Gray, Paul	Bureau of Trails	Concord	NH
Patelle. David		Warren	NH
Balch, Jeff	NH Snowmobile Association	Etna	NH
Morris, Bill			
Cabana, Dana	NH Snowmobile Association	Bow	NH
Northup, James	Forest Watch	Montpelier	VT
Gorman, Joseph	NH Snowmobile Association		
Bordeau, Karen	NH Fish & Game	New Hampton	NH
Dowey, Heather	The Wilderness Society	Boston	MA
Mulleavey, Raymond		Lincoln	NH
Van Vechten, Thomas	Upper Valley Group of the Sierra Club		
Wuerthner, George	Forest Watch	Richmond	VT
Zuber, Jan	Forest Watch	Rochester	VT
Sloan, Emily	Forest Watch	Worchester	VT
DiLuzio, Tony	Forest Watch	Keene	NH
Benoit, Jennifer	Forest Watch	Keene	NH
Magnus, David	Forest Watch	Barnet	VT
Trunzo, Michael	Forest Watch	Starkboro	VT
Lepine, Rachel	Forest Watch	Huntington	MA
Fegard, Charen	Forest Watch	Roxbury	VT
Weiss, Daniel	Forest Watch	Burlington	VT
Clendenning, Bruce	Appalachian Mountain Club	Concord	NH

Additional Transportation Reference Information

Road Maintenance Levels

Maintenance Levels define the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria. FSH 7709.58. Forest Service Roads within the Project Area are assigned to one of three Maintenance Levels:

Maintenance Level 1 (Closed for more than 1 year) – Assigned to intermittent service roads during the time these roads are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Roads receiving maintenance level 1 may be of any type, class, or construction standard, and may be managed at any other maintenance level while they are open for traffic. While being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses.

Level 2 (High clearance vehicles) – Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or specialized uses. Log haul may occur at this level.

Level 3 (Passenger vehicles; surface not smooth) – Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surface with either native or processed material.

Unclassified Roads - Class Code Definitions:

CLASSIFY_1986_NO – These roads do not meet the long term road intent of the Forest Plan (i.e. have "planned re-use within 20 years after the initial use"). They are roads for which the FS has jurisdiction, are needed for long-term highway vehicle use, have an historic frequency of use greater than 20 years, or have an historic frequency of use of 20 years or less and have trees (vegetation over 3" diameter) growing in the roadbed.

DECOMMISSIONED – These are unclassified roads which have been removed from service as a road, and have been reported in the Forest's annual Road Accomplishment Report.

DECOM_COMPLETE – These roads meet the stabilization and restoration requirements of decommissioning; therefore no physical action is required to decommission them. They are roads for which the FS has jurisdiction, are no longer needed for long-term highway vehicle use or are in (or pass through)

management areas which do not allow permanent roads (5.1, 6.1, 6.2, 6.3, 9.1), and have trees (vegetation over 3" diameter) growing in the roadbed.

DECOM_NEEDED – These roads do not yet meet the stabilization and restoration requirements of decommissioning and could be driven with minimal work; therefore physical action will be required to decommission them. These are roads on which the FS has jurisdiction, are no longer needed for long-term highway vehicle use or are in or pass through management areas which do not allow permanent roads, and have no brush or trees growing in the roadbed.

NON_ROAD – These are inventoried routes that were not constructed for highway vehicle use or are no longer being managed as a road, have not been decommissioned, and have not been specifically described by District personnel as skid trails. Many of these travel ways are currently being managed as trails.

SKID_ROUTE – These are inventoried routes that were not constructed for highway vehicle use, have not been decommissioned, and have been specifically described by District personnel as skid trails.

Table 10: Classified Roads wholly or partially within the Warren to Woodstock Project Area

Road	Road Name	Maintenance Level *	Total Length (miles)
FR 156	Elbow Pond	3	1.6
FR 156G	Elbow Pond spur G	2	0.6
FR 163	Jackman Brook	1	0.8
FR 211A	Mt. Cushman	1	0.7
FR 210	Blodgett Brook	1	1.7
FR 211	Mt. Cushman	2	1.7
FR 447	Durfee	1	1.0
FR 401	Batchelder Brook	1	2.4
FR 401A	Batchelder Brook spur A	1	0.3
NH 118	NH State Route 118	N/A	13.1

* Maintenance Levels are defined in the Endnote section of this document.

Note: All above listed roads are gated or blocked and closed to motorized use except for NFSR 156 which is open to street legal vehicles in summer and snowmobile use in winter.

Table 11: Unclassified Roads wholly or partially within the Warren to Woodstock Project Area

Identification Number	Class Code*	Total Length (Miles)
4100	Non_Road	0.8
4191	Decommissioned	1.0
4191B	Decommissioned	0.2
4209	Skid_Route	0.7
4209A	Skid_Route	0.3
4210	Decom_Complete	1.1
4210E	Skid_Route	0.1
4211	Decom_Complete	0.5
4211A	Decom_Complete	0.1
4213	Decom_Complete	0.5
4213A	Decom_Complete	0.4
4219	Classifify_1986_No	2.2
4219A	Skid_Route	2.1
4222	Non_Road	0.8
4223	Skid_Route	1.3
4224	Skid_Route	0.6
U-1031	Decom_Needed	0.6
U-1032	Decom_Needed	0.3

* Unclassified Road Class Code definitions are found in the Endnotes section of this document.

Note: All above mentioned Unclassified Roads are closed to motorized use.

Summary of Terms

Management on the White Mountain National Forest includes consideration of many natural resource factors at several landscape scales. The contrast between vegetation and wildlife management exemplifies this point. Vegetation can be managed at a relatively small scale where as wildlife management may often have habitat requirements that range from less than an acre to thousands of acres. Stands, habitat types, compartments, management areas, and habitat management units are terms used to help define these differences in various landscape management scales.

A *stand* is a landscape management term typically used to describe a tree community that is sufficiently uniform in composition, age, spatial arrangement, or condition so that it can be distinguished from adjacent communities. A stand may range in size from a few acres to over 100 acres. Stands are management (silvicultural) entities where each stand is managed using either even- or uneven-aged silviculture

practices. Stands, which are typically comprised of trees, are constantly growing and moving through various successional stages.

A *habitat type* is never smaller than a particular stand size. It is typically a unit of land comprised of a few acres to over 100 acres that supports a distinct successional sequence of vegetation growing on a unique type of soil material. The size of a particular habitat type may range from one stand to several stands in size. Examples of habitat types are spruce/fir, northern hardwoods, aspen, oak/pine, etc. The successional stages that each of these habitat types progress through are: early-successional, young, mature, and over-mature.

The Bureau of Trail defines a *snowmobile trail corridor* as a long distance trail. These trails have assigned numbers and are signed and maintained through a cooperative effort between the local clubs and the Bureau of Trails.

Riparian typing is a systematic inventory of streams classified according to process, rate, and setting as reflected by form, gradient, and substrate type. Only those aquatic types which are necessary to explain natural processes and make management decisions are differentiated. Table 12, below, describe the riparian types found on the WMNF.

A *compartment* is a number of stands grouped together or a small subdivision of a forested area used for the purpose of orientation, administration, and management (silvicultural) operations. Compartments contain a mix of habitat types and successional stages. These areas are defined by permanent boundary features (road, trail, stream, etc.). Compartment analysis can provide a mid-scale assessment of specific portions of the Forest. Project areas generally include portions of one or more compartments. Individual project areas generally include one or more compartments.

A *management area* is a large land area with specific management goals. Management areas 2.1 and 3.1 stress vegetation management, but have slightly different goals. Management areas provide us with a landscape-level look at the Forest and are not always contiguous. Management areas often cross compartment boundaries and subsequently contain multiple compartments.

A *habitat management unit* is approximately 4,000 acres in size, the boundaries of which follow compartment boundaries. Within a habitat management unit, there must be at least a pond or a stream with wetland potential. Habitat management units provide us with a landscape-level look at the Forest. The White Mountain National Forest Land and Resource Management Plan provides direction for what variety of habitat types and successional stages would be found on MA 2.1 and 3.1 lands an "ideal" habitat management unit. The Forest Plan further defines this "ideal" desired condition by stands that are managed using even- and uneven-aged silvicultural management systems.

Issues are identified collaboratively by the Forest Service and the public during the Scoping Process. The Forest Service separates issues into two groups:

Table 12: Riparian Types within the analysis area for water resources

Riparian Type	Brief Description	Substrate Type	Stream Crossing Potential
10	Steep gradient (5-15%), V-shaped valley. The bed appears stable for long periods. Most common as a headwater or tributary stream	Boulders – 40% Cobble – 35% Gravel – 20% Sand – 2%	Bridges only
11	Steep gradient (5-15%), V-shaped valley, large sediment load	Boulders – 30% Cobble – 35% Gravel – 25% Sand – 10%	Bridges only
12	Moderate gradient (2-10%), U-shaped narrow flat floored valley, common through wide range of stream sizes	Boulders – 40% Cobble – 35% Gravel – 20% Sand – 2%	Bridges or culverts can usually be installed with minimum disturbance and are easily maintained
13	Steep gradient (5-20%), debris slide scour and deposition zone	Bedrock – 10% Boulders – 30% Cobble – 30% Gravel – 20% Sand – 10%	Temporary structures only
16	Steep gradient (10-25%), V-shaped valley. Large boulders stabilize the steep gradient and streambanks.	Bedrock – 5% Boulders – 70% Cobble – 10% Gravel – 10% Sand – 5%	Bridges only
17	Low gradient (2-4%), broad flat floored valley, debris jams common in small brooks	Boulders – 15% Cobble – 35% Gravel – 30% Sand – 20%	Bridges or culverts can usually be installed with minimum disturbance and are easily maintained
20	Low gradient (2-4%), very broad flat floored valley, receives more bedload from upstream than it can transport	Boulders – 15% Cobble – 30% Gravel – 30% Sand – 25%	Bridges and culverts need to be sized to allow for deposition and located to minimize bank erosion at abutments
30	Low gradient (1%), meandering stream, gravel bars and persistent lateral cutting along 30-50% of the channel	Boulders – 2% Cobble – 20% Gravel – 50% Sand – 28%	Crossings may require bank stabilization upstream

- Issues addressed or resolved elsewhere or at a higher level (non-significant); or
- Issues used to develop alternatives (unresolved/significant) (CEQ, §1501.7 & §1506.3).

Issues used to develop alternatives were defined as those directly or indirectly caused by implementing the proposed action.

The Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) regulations require this delineation of issues in Sec. 1501.7, ". . . identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec.1506.3)..."

Issues that are not further analyzed in this document are:

1. Outside of the scope of the proposed action - issues that didn't relate to the needs defined for the Warren to Woodstock Snowmobile Trail Project to provide a broad range of recreation opportunities in the Project Area and/or;
2. Previously decided by law, regulation, Forest Plan, or other higher-level decisions - such as whether clearcutting is appropriate on the National Forest and/or;
3. Irrelevant to the decision being made - issues that would not be covered by the scope of the project as defined by the needs for change in the Warren to Woodstock Snowmobile Trail Project Area and/or;
4. Determined to be conjectural or not supported by factual evidence including issues disputing Forest Service findings that are based on opinions and not scientific facts.

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Table 13: Comparison of Alternatives by Resource Effects, including Direct/Indirect and Cumulative Effects

Resource	Alternative 1	Alternative 2	Alternative 3
Physical Environment			
Transportation Facilities - For potential effects of activities associated with transportation facilities in the Project Area, see the Soil and Water sections of this analysis.			
Direct/Indirect Effects: Warren to Woodstock Snowmobile Trail Project Area; Approximately 4,839 acres	Current road use will continue. Regular planned road maintenance will occur as specified for each road Maintenance Level. Activities may include: smoothing, removing debris, cleaning ditches, posting signs and replacing culverts. No additional activity will take place as a result of this analysis and decision; there will be no direct/indirect effects related to the No Action Alternative.	• Install drainage structures as indicated above on NFSR 211, 211A and 210 suitable for snowmobile traffic. • Construct 1.7 miles of new snowmobile trail. • Convert 1.5 miles of skid trail to snowmobile trail.	
		Enhance and restore 2.8 miles of remnant sections of the Carriage Road to be used as a snowmobile trail.	Construct an additional 2.8 miles of snowmobile trail parallel and adjacent to remnant sections of the Carriage Road.
Cumulative Effects: Compartment 36; Present – 2014; Approximately 4,839 acres	No change from current management.	Future management projects will need to address the safety concerns related to snowmobile use on NFSR 156G, 211, 211A concurrent with other management activities.	
Soil			
Direct/Indirect Effects: Warren to Woodstock Snowmobile Trail corridor; Approximately 37 acres	No soil erosion. Indirect effects on streams appear in the *water quality* section.	Soil erosion may occur during construction. It will be localized and site-specific. 2.8 miles of trail on the old carriage road would have minimal earth disturbance, mainly stumping of trees and shrubs. Indirect effects appear in the *water quality* section.	Soil erosion may occur during construction. It will be localized and site-specific. 2.8 miles of offset trail to avoid the carriage road will have trail excavation, similar to the rest of the trail. Indirect effects appear in the *water quality* section
Cumulative Effects: Wentworth-Warren Tributaries and Moosilauke Brook Watershed, 1994-2014; Approximately 32,600 acres of public and private lands	No cumulative soil erosion impacts are likely. Forest Service roads in the vicinity are properly designed and well-maintained, as is Route 118.		
Water			
Direct/Indirect Effects: Moosilauke Brook and Wentworth Warren Tributaries Watersheds; Approximately 32,600 acres of private and public lands	On-going activities would continue. No new direct or indirect effects.	Effects of snowmobile trail on channel stability would be localized and/or short-term. Increased sediment transport may occur on 1.7 miles new trail construction, 2.8 miles road restoration, and 4.3 miles of existing roads and skid trails. Water quality concerns minimized by keeping trail away from flowing water where possible.	Effects of snowmobile trail on channel stability would be localized and/or short-term. Increased sediment transport may occur on 4.5 miles new trail construction and 4.3 miles of existing roads and skid trails. Water quality concerns minimized by keeping trail away from flowing water where possible.
Cumulative Effects: Moosilauke Brook and Wentworth Warren Tributaries Watersheds, Approximately 32,600 acres of private and public lands; 1994-2014	No new cumulative effects. On-going activities would continue.	By following Forest Plan Standards and Guidelines, State BMPs, and additional mitigation measures listed in the document, cumulative effects of the snowmobile trail on the water resource would be within those analyzed/ anticipated in the Forest Plan and would be within state standards.	

Resource	Alternative 1	Alternative 2	Alternative 3
Physical Environment — Continued			
Air			
Direct/Indirect Effects: Upper Pemigewasset River valley and the Baker River valley; 250,000 acres of private and public lands	No new direct or indirect effects are anticipated as a result of implementation of this alternative. On-going activities would continue.	Current air quality would remain much the same throughout the airshed. Air quality standards are not expected to be exceeded for the compounds federally regulated by NAAQS. Air toxics risks are low in the Project Area.	
Cumulative Effects: Upper Pemigewasset River valley and the Baker River valley; 1994-2014; Approximately 250,000 acres of private and public lands	No new cumulative effects. On-going activities and effects on air quality would continue.	Effects of activities both on and off Forest Service lands are not expected to cause NAAQS to be exceeded; air toxics are not regulated for mobile sources. However, the CEP health-risk screening benchmark has been exceeded throughout the entire state for benzene, 1,3-butadiene, and formaldehyde. Concentrations of these compounds are predominantly determined regionally by more significant emissions sources including automobiles and manufacturing. Snowmobile-related emissions will reduce over time as new snowmobiles with more stringent emission controls replace older model snowmobiles.	
Vegetation			
Direct/Indirect Effects: Warren to Woodstock Snowmobile Trail corridor; Approximately 37 acres	Trees and shrubs will continue to revegetate the remnant sections of the Warren to Woodstock Carriage Road. No vegetation would be removed upon implementation of this alternative.	Restoration of remnant sections of the Carriage Road will require the removal of many young saplings, generally less than four inches in diameter. Trail construction in these sections will include the removal of approximately 76 trees, primarily hardwood species, between 6" and 8" DBH. No trees greater than 8" DBH are anticipated to be removed from these remnant sections of the Carriage Road. In the portion of the trail that would require new construction, approximately 228 trees per mile over 1.7 miles, or 390 trees larger than 6" DBH will be removed along the sections of new construction. (See Project File for sampling.)	In addition to the 1.7 miles of new construction described in Alternative 2, this alternative would require new construction and tree removal of an *additional* 2.8 miles of trail comprising approximately 6.8 acres of predominantly mature, mixed hardwoods. Total new construction considered in this alternative is 4.5 miles which would remove numerous saplings and an estimated 228 trees per mile, or 1,025 trees, larger than 6" DBH. (See Project File for sampling.)
		Removal of trees as proposed in Alternatives 2 and 3 is in compliance with MA 2.1 and 3.1 Goals.	
Cumulative Effects: Wentworth-Warren Tributaries and Moosilauke Brook Watershed, 1994-2014; Approximately 32,600 acres of public and private lands	No cumulative effects are anticipated as a result of the implementation of this alternative.	No adverse cumulative effects are anticipated as a result of this alternative. Tree crowns will quickly full occupy the narrow corridor of overstory cleared by the removal of saplings and trees along the trail. The productivity lost to the trees removed along the trail corridor will be recovered by the expanded crown diameters of the remaining trees along the trail.	
Heritage Resources			
Direct/Indirect Effects: Proposed Warren to Woodstock Trail project area boundary; Approximately 4,839 acres	Natural forces of vegetation re-growth will continue to deteriorate the integrity of the historic roadbed.	Trail construction and maintenance will rehabilitate, enhance, and protect deteriorated portions of the historic road. Permanent signing at trail/road crossings will interpret the historic construction, use, and abandonment of the Warren to Woodstock Carriage Road.	Natural forces of vegetation re-growth will continue to deteriorate the integrity of the historic roadbed. Permanent signing at locations where the original carriage road crossed what is now Route 118 will interpret the historic construction, use, and abandonment of the Warren to Woodstock Carriage Road.
Cumulative Effects: Proposed Warren to Woodstock Trail project area boundary; 1994-2014; Approximately 4,839 acres	This alternative will result in continued deterioration and, ultimately, obliteration of the remnant portions of the Carriage Road due to revegetation and other natural processes.	No new cumulative effects.	This alternative will result in continued deterioration and, ultimately, obliteration of the remnant portions of the Carriage Road tread due to revegetation and other natural processes.

Resource	Alternative 1	Alternative 2	Alternative 3
Sound Conditions			
Direct/Indirect Effects: Warren to Woodstock Snowmobile Trail Project Area; Approximately 4,839 acres	No new direct or indirect effects on sound are anticipated as a result of the implementation of this alternative. Current sound levels from Route 118 and other activities within the Project Area will continue.	Seasonally, there would be an average increase in sound of 5 to 15 decibels as perceived from Route 118 as a result of snowmobile traffic along the trail. Sound levels along the trail during the use season would be 65 to 75 decibels, depending on machine design, topography and direction of travel, number of machines in party, etc.	
Cumulative Effects: Upper Pemigewasset River valley and the Baker River valley; 1994-2014; Approximately 250,000 acres of private and public lands	No cumulative effects are anticipated as a result of the implementation of this alternative.	No cumulative effects are anticipated as a result of the implementation of this alternative.	
Recreation Resources			
Direct/Indirect Effects: Proposed Warren to Woodstock trail Project Area; Approximately 4,839 acres	There will be no change in the range or availability of recreation opportunities within the Project Area.	Establish 8.8 miles of snowmobile recreation opportunity in response to and in partnership with local snowmobile user groups. It is anticipated that the trail will be used by approximately 250 snowmobiles per week during the winter use season. Implementation of these alternatives would establish a seasonal motorized use and would require a site-specific Forest Plan amendment in the 0.4 acres on MA 6.2 lands through which the trail passes.	
Cumulative Effects: Proposed Warren to Woodstock Trail project area boundary; 1994-2014; Approximately 32,600 acres	No cumulative effects are anticipated as a result of the implementation of this alternative.	Improved network of snowmobile trails including more reliable North/South snowmobile connection between the Towns of Warren and Woodstock. Implementation would require a site-specific Forest Plan amendment in the 0.4 acres on MA 6.2 lands through which the trail passes.	
Visual Quality Resources			
Direct/Indirect Effects: Proposed Warren to Woodstock trail Project Area; Approximately 4,839 acres	The appearance of the Project Area will remain unchanged from its present condition. No other direct or indirect effects are anticipated as a result of the implementation of this alternative.	The proposed trail corridor is narrow and serpentine and generally sideslope in thick forest cover. It is not anticipated that the trail will be visible from any existing view point except for the locations where the proposed trail crosses Route 118.	
Cumulative Effects: Upper Pemigewasset River valley and the Baker River valley; 1994-2014; Approximately 250,000 acres of private and public lands	No cumulative effects are anticipated as a result of the implementation of this alternative.		
Community, Environmental, and Economic Resources			
Direct/Indirect Effects: Proposed Warren to Woodstock Trail Project Area; Approximately 4,839 acres	Data collection and analysis of this alternative will result in expenditures of approximately $ 42,600.	Data collection, analysis, and construction of this alternative will result in expenditures of approximately $249,800. This estimate may be significantly reduced by the level of volunteer labor, equipment and support as is routinely provided by local snowmobile clubs for similar projects throughout the state. No there other direct effects of implementation of this alternative within the Project Area.	Data collection, analysis, and construction of this alternative will result in expenditures of approximately $292,100. This estimate may be significantly reduced by the level of volunteer labor, equipment and support as is routinely provided by local snowmobile clubs for similar projects throughout the state.
Cumulative Effects: Upper Pemigewasset River valley and the Baker River valley; 1994-2014; Approximately 250,000 acres of private and public lands	No cumulative effects are anticipated as a result of the implementation of this alternative.	When viewed within the context of the cumulative effects area, no significant economic effects are anticipated as a result of implementation of this alternative. It is anticipated that snowmobile use of the Warren to Woodstock Snowmobile Trail will be nearly entirely composed of use that has been displaced from other trails within the region. While economic effects may be identified at a highly localized level (i.e. the towns of Warren and Woodstock, New Hampshire), when viewed in context of the region, there will no net effect on Community, Environmental Justice and Economic Resources.	

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Table 14: Trail Design and Construction Features, Mitigation Action, and Type

The following key describes the type of mitigation action being proposed:

Avoidance: Avoid the impact altogether by not taking a certain action or parts of an action.
Minimize: Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
Rectify: Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
Maintenance: Reduce or eliminate the impact over time by preservation and maintenance operations.
Monitor: Evaluate the effects of an action.

Resource	Alternative	Trail Design and Construction Features, Mitigation Action, and Type				When to Accomplish
Transportation	2 and 3	**Location**	**No. of Stream Crossings**	**Length of Structure (Ft.)**	**Objective**	Trail Layout and Construction
		New Construction, East Section	5	8	Provide adequate drainage and streamside protection. **Avoidance.**	
			1	12		
			1	16		
			1	30		
			Water bars, dips, outsloping and ditching will be used to control drainage and to minimize soil displacement or erosion. **Avoidance**			
	2	Remnant Carriage Road	Minimize disturbance of the original Road surface. **Rectify.**			
			Flush cut stumps. **Rectify**.			
			Fill material will be from areas immediately adjacent to trail. **Minimize**.			
			Restore Carriage Road profile to its original location and condition. **Rectify**.			
			Enhancement of this section of the Carriage Road would consist of cutting the in-grown saplings and small trees within the road and along the sides of the road. **Avoidance**			
			Protruding stumps would be removed and areas that are eroded would be re-contoured using water bars, dips, out sloping and ditching to provide adequate tread drainage. **Rectify**.			
	2 and 3	Remnant Carriage Road or Parallel Segments	1	30	Provide adequate drainage and streamside protection. **Avoidance.**	
			15	8		
			6	12		
			4	16		
		Road 211A	7	12	Provide adequate drainage and streamside protection. **Avoidance.**	
			1	14		
			9	16		
		Road 210	1	12	Provide adequate drainage and streamside protection. **Avoidance.**	
			1	30		
			1	40		

Resource	Alternative	Mitigation Action and Type			When to Accomplish
Transportation	Alternatives 2 and 3	Existing Skid Trail	4	8	Provide adequate drainage and streamside protection. **Avoidance**.	Trail Layout and Construction
			3	12		
			7	16		
			Water bars, dips, out sloping and ditching will be used to control drainage. **Minimize**.			
		New Construc-tion, West Side	7	8	Provide adequate drainage and streamside protection. **Avoidance**.	
			9	12		
		State Route 118	Signs will be posted at each entry point indicating the trail is closed to all summer motorized use. Local snowmobile clubs will be required to maintain these and other snowmobile traffic control signs. Snowmobile traffic control signs will be removed at the close of each use season. **Avoidance**			
			Approximately 30 to 50 yards of fill material will be required for construction of approach areas adjacent to Route 118. The fill material will be obtained off-Forest or from excess material from nearby State road projects. **Maintenance**			
		The trail will be closed to all non-winter motorized use. **Avoidance**				
		Trail construction will be completed under supervision of qualified State and Forest Service personnel. **Avoidance**.				
		The specific location of all stream crossing, drainage structures, bridges, etc. will be agreed upon between the State Trails Bureau representative and the Forest Service representative. **Minimize**.				

Resource	Alternative	Mitigation Action and Type	When to Accomplish
Water Resource	Alternatives 2 and 3	Trees along the stream channel will be removed only at designated stream crossings. Streamside buffers provide channel stability and filter sediment. Infiltration of sediment–laden water is greater in undisturbed buffers than in places where the soil has been compacted. **Avoidance**	Trail layout
		Bridges will be used for all stream crossings. Bridges reduce channel disturbance by keeping construction and traffic out of the active channel. Bridges are also less likely than culverts to plug and cause sediment inputs to streams. **Avoidance**	Trail layout
		Erosion control measures such as seeding and mulching cutslopes and fillslopes will occur immediately after trail construction. Promptly implemented erosion control measures are more effective at reducing sediment than those implemented later. **Rectify**	Upon trail construction
		Trail should cross streams at or as close to 90 degrees as possible. Minimize the length of snowmobile trail that is within 50 meters of flowing water. Risk of water contamination is lower when snowmobile trails are a minimum of 50 meters away from flowing water. **Minimize**	Trail layout

Resource	Alternative	Mitigation Action and Type	When to Accomplish
Soil Resource	**Alternatives 2 and 3**	In addition to generally applicable soil mitigation measures and best management practices, construction will be staged during dry periods of the year stipulating not more than 500 linear feet of trail surface exposed at one time, incorporating drainage structures, silt fences, hay bales and slope stabilization by the most appropriate means available under the guidance of qualified personnel. **Rectify.**	During construction

Resource	Alternative	Mitigation Action and Type	When to Accomplish
Vegetation Resource	**Alternatives 2 and 3**	If listed plants are found during project implementation, the Forest Service representative would alert the district biologist, and protective measures would be taken.	During construction
		Winter tree removal and skidding of saw timber is preferred, if necessary.	
		Timber will be removed along skid trails and landings designated by Forest Service personnel.	
		Native vegetation and straw will be used during revegetation per Executive Order 13112, 23/99.	
		Along remnant sections of the Carriage Road, saplings will be cut flush with the original tread surface and all ground disturbance will be minimized. (Alternative 2 only.)	
		In areas of new construction, trail location will minimize cutting of trees.	

Resource	Alternative	Mitigation Action and Type	When to Accomplish
Heritage Resource	Alternative 2	Flush cut tree stumps on remnant sections of the Warren to Woodstock Carriage Road. Avoiding ground disturbance of the historic roadbed will protect its historic integrity. **Avoid**	During construction
		Limited stump removal and associated heavy machinery use on remnant sections of the Carriage Road. Damage to the integrity of the historic roadbed will be limited. **Minimize**	
		Retain the historic width and appearance of the remnant sections of the Carriage Road. Impacts to the historic character and integrity of the roadbed will be avoided. **Avoid**	
		If, in the course of any project activities, previously unknown structural elements (such as culverts) or artifacts are located, activities will stop immediately in that location. The district heritage paraprofessional and Forest archaeologist will evaluate the finds and make recommendations on how to proceed. Previously unrecorded heritage resources will be protected from destruction until recorded and evaluated, and project modifications will be implemented as necessary to protect significant features. **Minimize**	
		Historical interpretation of the road will include signs at the trail crossing of Route 118, or other locations as appropriate. Interpretation has been used successfully elsewhere as mitigation for enhancement, re-use or loss of historic structures. **Rectify**	Ongoing
		The trail will be maintained as specified in the Memorandum of Understanding (MOU) between the NH State Bureau of trails and the White Mountain National Forest. Implementation agreements may include Challenge Cost Share Agreements, participating Agreements, or Sponsored Volunteer Agreements. Implementation agreement will include a Cultural Resource Protection and Management clause to stipulate that segments of the snowmobile trail that follow the historic road will minimize ground disturbance and retain the historic character of the road. The trail will be closed when there is insufficient snow cover or ground freeze to prevent damage to the historic roadbed. By bringing awareness of the historic road to snowmobile groups and requiring sensitivity to the character and integrity of the historic road in their maintenance and use of the snowmobile trail, the road will continue to be protected as a heritage resource. **Maintenance**	Ongoing

Resource	Alternative	Mitigation Action and Type	When to Accomplish
Recreation Resource	Alternatives 2 and 3	Subsequent resource management activities may result in concurrent use of forest roads and skid trails by snowmobiles and other administrative and/or public traffic. Appropriate accommodations for dual use could include widening the road to allow snowmobile use adjacent to the current road surface, by-passing the road with a trail parallel to the road, seasonal closures, scheduled daily closures, or a combination of these measures. **Avoidance**	Upon trail completion
		Existing gates may be closed in non-winter months to preclude unauthorized road and trail use. A new traffic control gate will be installed at the Forest Service boundary near Batchelder Brook. The gate will be closed during non-winter months. **Avoidance**	
		Speed limit signs would be posted along the trail to control speed. "Caution", "stop", and crossing signs would be posted at road crossings. Caution signs would be posted to inform users of situations along the trail where extra attention is warranted including the recurring presence of wildlife, such as moose. **Avoidance**	
		The trail would be open for winter-motorized use only, and signed as closed to all other motorized uses. **Avoidance**	

Resource	Alternative	Mitigation Action and Type	When to Accomplish
Visual Resource	Alternatives 2 and 3	Cut and fill slopes will be no greater then 1.5 to 1. **Minimize**	During construction
		Rocks will be dispersed along the trail and rocks will not be left leaning against existing trees. **Minimize**.	Seasonally, upon completion
		Cut trees and vegetation will be lopped and made to lay no higher than 36 inches above the ground. **Minimize.**	Seasonally, upon completion
		Stumps will be placed root side down in ground depressions so they are naturally appearing. Equipment operators will use care not to skin residual trees. **Minimize**.	Upon trail completion
		Snowmobile traffic control signs that are located at road crossings will be removed in non-winter months. **Minimize**	Seasonally, upon completion

The generally applicable Forest and Management Area-wide Standards and Guidelines listed in the Forest Plan, as amended, in sections III and appendix VII B:18-22 and state Best Management Practices (BMPs) are applicable to all action alternatives. No addition mitigation measures, other than those applicable in the Forest Plan, are specified for Fish and Aquatic Species, Air, Sound, Community, Environmental Justice or Economics Resources. The Project will incorporate terms and conditions for protection of Indiana bat, as outlined in the US Fish and Wildlife Service BO and incorporates the Standards and Guides from the Canada lynx Conservation Assessment and Strategy.

Where is this Project in the NEPA Process?

NEPA is the Forest Service decision-making process. An acronym for the National Environmental Policy Act of 1969, NEPA provides opportunities for interested parties to give their ideas and opinions about resource management. This input is important in helping us identify resource needs, which will shape the alternatives evaluated and lead to the formation of a decision.

This form shows the steps of the NEPA process, and where the attached proposal is in that process.

Step One - Need for a Project

The Forest Service or some other entity may identify the need for a project.

You may bring the need for a project to the attention of the Forest Service.

Step Two - Develop Project Proposal

The Forest Service or a project proponent develops detailed, site-specific proposal.

You may be proponent who develops proposal or ***YOU*** can share input and ideas.

Step Three - Scoping (Public Input)

The Forest Service solicits public input on the site-specific proposal to define the scope of environmental analysis and range of alternatives to be considered.

You provide site-specific input: suggest issues, alternatives, mitigation measures

Step Four - Develop Reasonable Range of Alternatives

If proposal fits categorical exclusion: Forest Service makes & documents decision

If scoping determines need for EA or EIS: Forest Service develops alternatives

Step Five – Information for 30-Day Formal Public Comment Period

Forest Service performs analysis of environmental effects, may identify the preferred alternative, and solicits formal public comment (30-Day Comment Period)

You provide timely & substantive comments on the analysis during Comment Period

You suggest alternatives to the proposed action during the scoping process

Step Six – Environmental Analysis & Decision

Forest Service finalizes the Environmental Assessment and makes decision to implement one of the alternatives

You can review decision; you can appeal if you disagree and you have "standing"

Step Seven - Appeal

Forest Service allows public 45 days following legal notice of decision to appeal

You may file formal Notice of Appeal

Step Eight - Implementation

Forest Service implements the project

You may contribute labor, equipment or funding to implement the project

Step Nine - Monitor and Evaluate

Forest Service monitors and evaluates project results

You provide feedback on the project to the Forest Service

How to Comment on the Warren to Woodstock Snowmobile Trail Project 30-Day Comment Information

In June 2003, the USDA-Forest Service issued new implementing regulations (Title 36, Code of Federal Regulations, Part 215) for notice, comment and appeals. The following instructions incorporate these changes. The new regulations allow only those who submit ***timely and substantive*** comments to be eligible to appeal my final decision. To assure that I receive and can consider your comments in my decision, please review these instructions carefully.

TO BE TIMELY your comments must be received within 30 calendar days following the publication of the legal notice in the Union Leader. When the comment period ends on a Saturday, Sunday or a Federal holiday, comments will be accepted until the end of the next Federal working day. If you do not have access to the Union Leader, please call the Ammonoosuc/Pemigewasset Ranger Station at 603-536-1315 (TTY 603-536-3281) for the published date.

TO BE SUBSTANTIVE your comments must be within the scope of the proposed action, specific to the proposed action, have a direct relationship to the proposed action and include supporting reasons as to why I should consider your comments in the EA and my decision. Substantive comments should enhance the project analysis and provide meaningful and useful information about your concerns.

It is the responsibility of persons providing comments to submit them by the close of the comment period. Individuals and organizations wishing to be eligible to appeal must provide the following information:

1) Name, address and telephone number;
2) Title of the proposed action Warren to Woodstock Snowmobile Trail Project);
3) Specific substantive comments on the proposed action, along with supporting reasons the Deciding Official should consider in reaching a decision; and
4) Signature or other verification of identity upon request; identification of the individual or organization who authored the comment(s) is necessary for appeal eligibility.

Comments should be directed to White Mountain National Forest, Tom Wagner, Forest Supervisor, as follows:

- Written comments must be postmarked by the Postal Service, e-mailed, Faxed or otherwise submitted by 11:59 pm ET on the 30th calendar day following publication of the legal notice.
- Letters should be submitted to Tom Wagner, Forest Supervisor, Warren to Woodstock Snowmobile Trail Project, 1171 Route 175, Holderness, NH 03245. Hand delivered letters should be submitted during these office hours: Monday through Friday, 8:00 am - 4:30 pm;
- FAX comments should be sent to 603-536-5147; and

- E-mail comments should include an identifiable name and be sent to: (**comments-eastern-white-mountain@ammo-pemi@fs.fed.us**)

  Comments submitted as electronic documents must be in plain text (.txt), rich text format (.rft) or Word (.doc) format. When you submit your comments to this e-mail address, you should receive an automated electronic acknowledgment as confirmation of receipt. If you do not receive acknowledgment, it is your responsibility to ensure timely receipt by other means.

- Oral comments may be submitted Monday through Friday 8:00am to 4:30pm, either by phone (603-536-1315) or in person; and must be received by the close of business on the 30th calendar day following publication of the legal notice.